ESim for the PC4 and PF8 Printers

Programmer's Reference Manual

Intermec®

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Version Number	Date	Description of Change
003	11/2008	• Updated code pages.
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Contents

Before You Begin vii
Safety Information vii
Global Services and Support vii
Warranty Information vii
Web Support viii
Telephone Support viii
Service Location Support viii
Who Should Read This Manual ix
Related Documents ix

1 Introducing ESim 1

What is ESim Protocol 2

What's New 2

About ESim Commands 3
Commands List 3

2 Sending ESim Commands to the Printer 7

Communicating With the Printer 8

Printing a Test Label 9

Switching Between Printer Operation Modes 10
Autosensing Mode 10
Dump Mode 11
Direct Mode 12
Print Mode 12
Error Mode 12
Form Retrieve Mode 13
Form Edit Mode 13
Pause Printing Mode 13

Resetting to Factory Default Settings 14
Default Setup 14
Example 15

3 Designing Bar Code Labels 17

Introduction to Label Forms 18
About Fields 18
Working with Fields 18
Specifying Data for Fields 18
Field Positioning 19

Creating a Sample Label Form 20
Creating Command Strings for the Label Formats 21

Complex Label Design 23
Example with Storing Label Forms 23
Example with Retrieving Label Forms 25

4 ESim Commands 29

ESim Commands 30
About the Command Syntax 30
^default - Restore Factory Defaults 31
^@ - Reset Printer 31
? - Download Variables 32
^A - Enter Pause Printing Mode 33
; - Ignore Following Data 33
A - Printing Text 34
^B - Break Batch Printing 40
B - Standard Bar Codes 40
Bar Code 128 Family 44
Code 128 With Auto Selection of Subset and UCC/EAN 44
Code 128 With Manual Selection of Subset 45
b - Two-Dimensional Bar Codes, General Part 46
b - EAN/UCC Composite-Code 47
b - DataMatrix 50
b - PDF417 51
b - QR Code 53
Error Correction 54
Masking (Intrinsic) 54
C - Counter 57
Protect Counters 61
C - Cut Immediate 62
^C - Exit Pause Printing Mode 62
D - Density 63
^D - Remaining Labels 65
EI - List Soft Fonts 66
EK - Delete Soft Font 66
ES - Store Soft Font 67
^ee - Immediate Error Report 71

eR - User-Defined Error/Status Character Control 72
f - Cut Position 74
FE - End Store Command. 75
FI - Print Form Information 75
FK - Delete Form. 76
FR - Retrieve Form 76
FS - Form Store 77
Startup Form. 78
GG - Print Graphics 78
GI - Print Graphics Information. 79
GK - Delete Graphics 79
GM - Store Graphics In Memory 79
GRP - Reply Graphics From Print Buffer 82
GW - Store Graphics In Image Buffer 83
I - Character Selection 84
i - Asian Character Spacing 87
JB - Disable Top of Form Backup 88
JF - Enable Top of Form Backup. 88
j - Media Feed Adjustment 89
LE - Line Draw Exclusive. 90
LO - Line Draw Black. 91
LS - Line Draw Diagonal. 92
LW - Line Draw White 93
Memory - Memory Allocation 94
N - Clear Image Buffer. 95
O - Option Select 95
S - Reverse Gap Sensing Enabled 96
N - Label Taken Sensor Disable 96
D - Ribbon End Sensor Disable 96
C - Cutter Enabled 97
oR - Character Substitution. 97
P - Print 98
PA - Print Automatic 99
PF - Feed Media. 100
Q - Set Form Length (Gap or Slot). 101
Continuous Stock 103
Q - Set Form Length (Black Mark). 104
q - Set Label Width. 106
R - Set Reference Point 107
r - Set Relative Reference Point 109
S - Speed Select 110
SA - Setup Adjust 112
SPC - Setup Print Copy. 113
TD - Define Date Format 113
TS- Set Real-Time Clock 115
U- Print Configuration (General). 115
UC - Command Reply Accept Character Control. 116

UDC - Memory Cartridge Information (PC4 only) 117
UE - Soft Font Information Inquiry 118
UF - Form Information Inquiry 118
UG - Graphics Information Inquiry. 119
UI - Enable Prompts/Code Page Inquiry. 119
UM - Code Page and Memory 120
UN - Disable Error Reporting 121
UP - Code Page and Memory Inquiry Print 121
US - Enable Error Reporting 122
USR - Read Serial Number 123
UV - Product Identity and Asian Font Types 123
V - Define Variable 123
W - Windows Mode 125
X - Draw Box 126
Y - Serial Port Setup 127
Z - Print Direction 128

5 ESim Fonts 131

Resident Fonts. 132

Font Sizes 1-5. 133

6 Code Pages 135

Printout Samples. 136
Code Page DOS 437 English (UK); Cmd I8,0,001 136
Code Page DOS 850 Multilingual (Latin 1); Cmd I8,1,001 137
Code Page DOS 852 Latin 2 (Cyrillic II/Slavic); Cmd I8,2,001 137
Code Page DOS 860 Portuguese; Cmd I8,3,001 138
Code Page DOS 863 Canada (French); Cmd I8,4,001 138
Code Page DOS 865 Norway; Cmd I8,5,001 139
Code Page DOS 857 Turkish; Cmd I8,6,001 139
Code Page DOS 861 Icelandic; Cmd I8,7,001 140
Code Page DOS 862 Hebrew; Cmd I8,8,001 140
Code Page DOS 855 Cyrillic; Cmd I8,9,001 141
Code Page DOS 866 Cyrillic; Cmd I8,10,001. 141
Code Page DOS 737 Greek; Cmd I8,11,001 142
Code Page DOS 841 Greek 1; Cmd I8,12,001 142
Code Page DOS 869 Greek 2; Cmd I8,13,001 143
Code Page Windows 1252 Latin 1; Cmd I8,A,001 143
Code Page Windows 1250 Latin 2; Cmd I8,B,001 144
Code Page Windows 1251 Cyrillic; Cmd I8,C,001 145
Code Page Windows 1253 Greek; Cmd I8,D,001 145
Code Page Windows 1254 Turkish; Cmd I8,E,001. 146

Code Page Windows 1255 Hebrew; Cmd I8,F001 146
Code Page In Dump Mode....147
Size 1-4 (7 bit); USA; CMD I7, 0 147
Size 1-4 (7 bit); British; CMD I7, 1 148
Size 1-4 (7 bit); German; CMD I7, 2....148
Size 1-4 (7 bit); French; CMD I7, 3....148
Size 1-4 (7 bit); Danish; CMD I7, 4....149
Size 1-4 (7 bit); Italian; CMD I7, 5 149
Size 1-4 (7 bit); Spanish; CMD I7, 6....149
Size 1-4 (7 bit); Swedish; CMD I7, 7....150
Size 1-4 (7 bit); Swiss; CMD I7, 8 150
Size 5 (7 bit); USA; CMD I7, 0....150
Size 5 (7 bit); British; CMD I7, 1....151
Size 5 (7 bit); German; CMD I7, 2....151
Size 5 (7 bit); French; CMD I7, 3....151
Size 5 (7 bit); Danish; CMD I7, 4 152
Size 5 (7 bit); Italian; CMD I7, 5 152
Size 5 (7 bit); Spanish; CMD I7, 6....152
Size 5 (7 bit); Swedish; CMD I7, 7 153
Size 5 (7 bit); Swiss; CMD I7, 8 153

A Error Handling 155

Error Handling Principles 156
Error Action Source....156
A - Command Errors 156
B - Printing Errors 156
C - Status 156
D - Special Mode....156
Error Action Output Information 156
Serial Port (RS-232 or USB)....156
Parallel Port 157
Error Recovery/Output....157
Error-Handling Commands....157

Error Types....158

Error Response Messages 159

Error Response Tables....160

Before You Begin

This section provides you with safety information, technical support information, and sources for additional product information.

Safety Information

Your safety is extremely important. Read and follow all warnings and cautions in this document before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

This section explains how to identify and understand dangers, warnings, cautions, and notes that are in this document. You may also see icons that tell you when to follow ESD procedures and when to take special precautions for handling optical parts.

A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Note: Notes either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

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Contact: Mr. Sinbum Kang
Telephone: +82-31-436-1191
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Daegu Venture Center Bldg 95
Shinchun 3 Dong
Donggu, Daegu City, Korea
E-mail: **jmyou@idif.co.kr** or **korlim@gw.idif.co.kr**

Who Should Read This Manual

This document is for the person who is responsible for installing, configuring, and maintaining the PC4 or PF8 printer.

This document provides you with information about the features of the ESIM protocol and how to use it to generate bar code labels.

Related Documents

This table contains a list of related Intermec documents and their part numbers.

Document Title	Part Number
EasyCoder PC4 Bar Code Label Printer User's Guide	1-960636-xx
EasyCoder PF8d/PF8t Bar Code Label Printer User's Guide	934-011-xxx
PF8 Printer Service Manual	939-009-xxx

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1. Visit the Intermec web site at **www.intermec.com**.
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1 Introducing ESim

This chapter describes ESim and includes the following sections:

- **What is ESim Protocol**
- **What's New**
- **Added new content and reorganized chapters**

What is ESim Protocol

ESim is a built-in protocol for use with Intermec bar code label printers. ESim enables any computer, terminal, scanner, or keyboard that can produce ASCII characters to control the printer. ESim is an alternative to Intermec InterDriver, which requires the Microsoft Windows operating system.

With the ESim protocol, you can use any editor to control the printer over the serial RS-232 channel, the USB channel, or the parallel Centronics channel.

This manual has been organized to provide you with an understanding of printer functions and command structure. It also assists in designing labels using the ESim protocol on both the PC4 and PF8 printers.

Each printer uses a different version of the ESim protocol:

- The EasyCoder PC4 uses ESim v.6.xx or later.
- The EasyCoder PF8 uses ESim v.7.xx or later.

Note: Any labels created on ESim v.6.xx can be printed on v.7.xx and later, but since new commands are introduced in newer versions of the ESim protocol, labels created on previous versions of ESim cannot be printed.

New commands that are unavailable for the PC4 or ESim v6.25 have been noted in this manual. Other Intermec printers may only support earlier versions of ESim, or may require different firmware. For more information, see your printer user's guide.

What's New

- Updated document to new visual identity
- Added new content and reorganized chapters

About ESim Commands

The command syntax is based on upper and lower case characters, numeric characters, commas (as separators), quotation marks and line feeds (LF; ASCII 10 decimal). The LF in this manual is shown as 8 at the end of most command descriptions. Line Feeds (LF) are required to be sent at the end of most command lines. Some commands require both a carriage return and a line feed (<CR/LF>).

Note: All programming examples in this manuals start with a Line Feed (LF), depicted as ↵ It is recommended to start any sequence of command lines with a Line Feed.

Most computer-based systems send CR/LF when you press **Enter**. The CR (carriage return) sent in a CR/LF sequence is ignored. Sending a CR alone has no effect.

ESim commands and parameters must be used only as described in this manual. Use of unknown commands and parameters may cause permanent printer malfunction.

Commands List

The tables below lists all commands available for the ESim protocol for the PC4 and PF8 printers.

General Setup Commands

Command	Description	Note
I	Character set selection	
i	Asian character spacing	
oR	Character substitution	
UC	Command reply accept character control	
W	Windows mode	PC4 only
Y	Serial port setup	

Print Setup Commands

Command	Description
D	Density
f	Cut position
JB	Disable top of form backup
JF	Enable top of form backup
j	Media feed adjustment
O	Option select
Q	Set form length
q	Set label width
R	Set reference point
r	Set relative reference point
S	Speed select
SA	Setup adjust
SPC	Setup print copy
Z	Print direction

Error Setup Commands

Command	Description
eR	User-defined error/status character control
UN	Disable error reporting
US	Enable error reporting

Store and Clean Commands

Command	Description
EK	Delete soft font
ES	Store soft font
GK	Delete graphics
GM	Store graphics in memory
M	Memory allocation

Store and Clean Commands

Command	Description
EK	Delete soft font
ES	Store soft font
GK	Delete graphics
GM	Store graphics in memory
M	Memory allocation

Form Commands

Command	Description
C	Counter
FE	End form store
FK	Delete form
FR	Retrieve form
FS	Form store
PA	Print automatic
V	Define variable
?	Download variables

Render Commands

Command	Description
A	Print text
B	Print standard bar codes
b	Print two-dimensional bar codes
GG	Print graphics
GRP	Reply graphics from print buffer
GW	Store graphics in image buffer
LE	Line draw exclusive
LO	Line draw black
LS	Line draw diagonal
LW	Line draw white
N	Clear image buffer

Render Commands (continued) (continued) (continued)

Command	Description
X	Draw box

Print Engine Commands

Command	Description
C	Cut immediate
P	Print
PF	Feed media

Information Commands

Command	Description
EI	List soft fonts
FI	Print form information
GI	Print graphics information
U	Print configuration
UDC	Memory cartridge information
UE	Soft fonts information inquiry
UF	Form information inquiry
UG	Graphics information inquiry
UI	Enables prompts and code page inquiry
UM	Code page and memory inquiry
UP	Code page and memory inquiry printing
UV	Product identity and Asian font types

2 Sending ESim Commands to the Printer

This chapter includes instructions for sending ESim commands to the printer. It includes the following sections:

- **Communicating With the Printer**
- **Printing a Test Label**
- **Switching Between Printer Operation Modes**
- **Resetting to Factory Default Settings**

Communicating With the Printer

You can use a terminal program to send ESim commands to the printer. The following procedure describes how to set up a connection using Windows HyperTerminal, a program available on all computers that run Microsoft Windows.

To send an ESim command to a printer

1. Connect the printer to the serial port (COM1) on your desktop PC.
2. On the desktop PC, start the HyperTerminal application. (**Start** > **All programs** > **Accessories** > **Communications** > **HyperTerminal**)
3. Select a name and icon for your connection. Click **OK.** The Connect To window appears.
4. Select **Connect Using: COM1**
5. Click **OK.** The COM1 Properties window appears.
6. Configure the port settings so they match those of your printer. To obtain the printer's port settings, print a test label. For help see **"Printing a Test Label" on page 9**.

   Bits per second: 9600

   Data bits: 8

   Parity: None

   Stop bits: 1

   Flow control: None
7. Click **OK**.
8. Select **File** > **Properties**. The properties window appears.
9. Select the **Settings** tab.
10. Click **ASCII Setup**. The ASCII Setup window appears.
11. Check the following check boxes:
    - **Send line ends with line feed**
    - **Echo typed characters locally**

- **Append line feeds to incoming line ends**

12 Click **OK** to save and exit ASCII Setup.

13 Click **OK**.

14 Test your connection by typing "**UV**" in the terminal window. The UV command returns the current firmware version, which is printed in the terminal window.

Note: ESim commands are case-sensitive.

Printing a Test Label

A test label provides information about the printer's current configuration, such as available memory, firmware version, and media settings. You can print a test label from Auto-sensing mode or by sending the "**U**" command to the printer. For help, see the *PF8d/PF8t User's Guide* (P/N 934-011-xxx).

To print a test label

1 Load media in the printer.

2 Press and hold the **Feed** button while turning the Power switch to the On position (—).

The status LED blinks green for 2 seconds, blinks red for 2 seconds, and then blinks green again.

Note: If you are using continuous stock or gap media, release the **Feed** button when the status LED is blinking green. If you are using black marked media, release the **Feed** button when the LED is blinking red.

3 The printer automatically adjusts the label gap sensor and media feed according to the characteristics of the media. The printer may feed three to four labels before the adjustment is completed. If you are using peel-off media, remove the labels as they are fed out.

After a short delay, a test label will print and the printer will enter Dump mode.

Press the **Feed** button once to return to normal operation, or press and hold the **Feed** button for at least 3 seconds after the test label prints to reset the printer to the default settings. The status LED will glow red indicating that the printer was reset to the default settings and then cycle to green.

For an illustration and explanation of the test label, see **"Creating a Sample Label Form" on page 20**.

Switching Between Printer Operation Modes

When you send ESim commands to the printer, make sure you have placed the printer in the correct operating mode to interpret those commands. You can put the printer the in following eight modes:

- Autosensing Mode
- Dump Mode
- Direct Mode
- Print Mode
- Error Mode
- Form Retrieve Mode
- Form Edit Mode
- Pause Printing Mode

Autosensing Mode

Autosensing mode is used to calibrate the sensors that control the media feed and determine where the individual labels or tags start and stop. There are two different sensors.

- The Gap sensor detects perforated slots in continuous media and the gap between self-adhesive labels mounted on a liner (backing paper).
- The Black Mark sensor detects black marks printed on the bottom side of the media.

To enter Autosensing mode

1 Turn off power to the printer.

2. Load the appropriate type of media.
3. Switch on the power while holding down the **Feed** button.
4. Select a detection method:
   a. Select gap detection by releasing the **Feed** button within 2 seconds. The status LED blinks green and the printer is set to gap detection.
   b. Select black mark detection by pressing and holding the Feed button for more than 2 seconds. The status LED blinks red and the printer is set and calibrated for black mark detection.
5. Once you have selected a detection method, a test label prints and the printer switches to Dump mode.

To exit Autosensing mode

- Press the Feed button for more than 1 second while autosensing is progress. The printer exits to Direct mode.

Dump Mode

In Dump mode, the printer prints out the echo of a received ASCII. You can use this mode to debug your software when the printer does not perform as expected.

To enter Dump mode

1. Start up the printer in Autosensing mode. For help, see **"Autosensing Mode" on page 10**. After the test label is printed, the printer switches to Dump mode.
2. The printer waits for ASCII dump printing. Once you have sent a string of characters or a label form to the printer, press the Feed button.
3. A printout is created containing all characters between ASCII 000 decimal and ASCII 255 decimal.

To exit Dump mode

- Press the Feed button. A label with the message "out of DUMP" is printed.

Direct Mode

Direct mode is the main operating mode of the ESim protocol. In Direct mode, various commands are available to set up and reset the printer, store graphics and soft fonts, edit labels and formats, request reports, clear the image buffer, and delete soft fonts, forms, and graphics.

The Direct mode is also used for retrieving and printing preprogrammed label formats. For a complete list of Direct mode commands, see the **"Commands List" on page 3**.

The printer enters Direct mode after it is turned on. Exiting other modes may also return the printer to Direct mode.

Print Mode

Use print mode to print labels, feed out blank media, and control the optional cutter.

To enter Print mode

- From Direct mode, use the P, PA, or C command, or press the Feed button. The printer switches to Print mode.
- From Print Pause mode, execute the ^C command to return to Print mode.

To exit Print Mode

- Successfully complete a printing operation.
- Pause the printing operation with the ^A command. For help, see **"^A - Enter Pause Printing Mode" on page 33**.
- Stop the printing operation with the ^B command. Note that this also cancels any pending print jobs. For help, see **"^D - Remaining Labels" on page 65**.

Error Mode

Use error mode to report and correct various types of errors. For more information see **"Error Handling" on page 155**.

The printer automatically switches to Error mode when an error occurs. After recovering from an error, the indicator lamp switches to green and the printer returns to the mode it was in previous to the error.

Form Retrieve Mode

Form Retrieve mode retrieves forms previously edited in Direct mode and populates the form fields with data and counter values.

To enter Form Retrieve mode

- In Direct mode, use the FR or ? command. The printer switches to Form Retrieve mode.

To exit Form Retrieve mode

- The printer exits Form Retrieve mode when the number of received lines corresponds to the actual number of variables and counters in the form.

Form Edit Mode

Use Form Edit mode to permanently store label forms, plain text, bar codes, graphics, lines, and boxes in the printer's memory. Form Edit mode allows the use of variables and counters which are not available from Direct mode. You can retrieve and print individual label forms from Direct mode.

You can include some setup parameters in forms to adapt the printer for different applications. However, such setup parameters affect the global setup after the form has been retrieved and printed.

Pause Printing Mode

You can use the Pause Printing mode for pausing or breaking a batch print.

To enter Pause Printing mode

- In Print mode, enter the ^A command. The current print job is paused and the printer switches to Pause Printing mode. For help, see **"^A - Enter Pause Printing Mode" on page 33**.

To resume printing a paused print job

- In Print mode, enter the ^C command or press the Feed button. The printer resumes printing.

To stop printing

- In Print mode, use the ^B command. The printer breaks the printing of the paused print job. For help, see **"^D - Remaining Labels" on page 65**.

Resetting to Factory Default Settings

To restore the factory default settings, do one of the following:

- Press and hold the **Feed** button for more than 3 seconds.
- Start the ESim Config Tool and click **Restore Factory Defaults** on the Setup tab.
- Send the ^default command to the printer.

Default Setup

This table lists the default settings on the PC4 or PF8 printers.

Default Printer Settings

Parameter	Command	Default Setting
Error/status character	eR0,0	XOFF/XON-handling
Density	D10	10
Character set	I8,0,001	8 bits, code page 0, country code 001
Top of form backup	JF	Enabled
Media feed adjust	J136 J204	136 dots at 203.2 dpi 204 dots at 300 dpi
Label gap sensor	ON	LTS, TT mode, reverse gap, and cutter disabled.
Character substitution	oR	No substitution
Form length	Q24,0	Continuous mode, print gap 24 dots
Label width	q832 q1208	832 dots at 203.2 dpi 1208 dots at 300 dpi

Default Printer Settings (continued)

Parameter	Command	Default Setting
Reference point	R000,000	X:000, Y:000
Print speed	S3	76 mm/sec (3 inches/sec)
Reply character	UC0	None
Error handling	UN	Error reporting disabled
Windows mode	WN	Disabled
Serial port	Y96,N,8,1	9600 baud, no parity, 8 data bits, 1 stop bit
Print direction	ZT	Start printing at top of image buffer

Default Printhead Settings

Printhead Resolution	Measures
203.2 dpi printheads	203.2 dpi (8 dots/mm) in both directions
300 dpi printheads	300 dpi (11.8 dots/mm) across the media path 304.8 dpi (12 dots/mm) along the media path

Example

In this example, the PF8 is set up for direct thermal printing of full-width thermal top labels in the peel-off mode without the label taken sensor. The default communication setup and character set are not changed.

First, change these setup parameters from Direct mode:

- Density from 10 to 8
- Media feed adjustment from 136 to 110
- Label taken sensor from enabled to disabled

Enter the following commands:

Command	Explanation
8	CR/LF to start command structure.
D8 8	Set density.
j110 8	Set media feed adjustment for peel-off operation.

Command	Explanation
ON 8	Disable label taken sensor.

3 Designing Bar Code Labels

This chapter includes instructions on how to design bar code labels. It includes the following sections:

- **Introduction to Label Forms**
- **Creating a Sample Label Form**
- **Complex Label Design**

Introduction to Label Forms

To print a label on the PC4 or PF8 printer, you must create a label form, send the form to the printer, send data to fill in the fields in the format, and then print the label. A form is a template that defines how the information prints on a label.

You define a form by sending ESim command strings to the printer. The printer stores the form in its RAM or flash module. You can edit forms with ESim commands when you place the printer in Form Edit mode.

About Fields

A bar code label format is composed of several different fields that hold different types of data. The data in the fields may specify the start position, rotation, magnification, and more of a label. You define information to be printed on the label as a field in the form. After the fields are defined, you can pass data to the fields and print the label.

Working with Fields

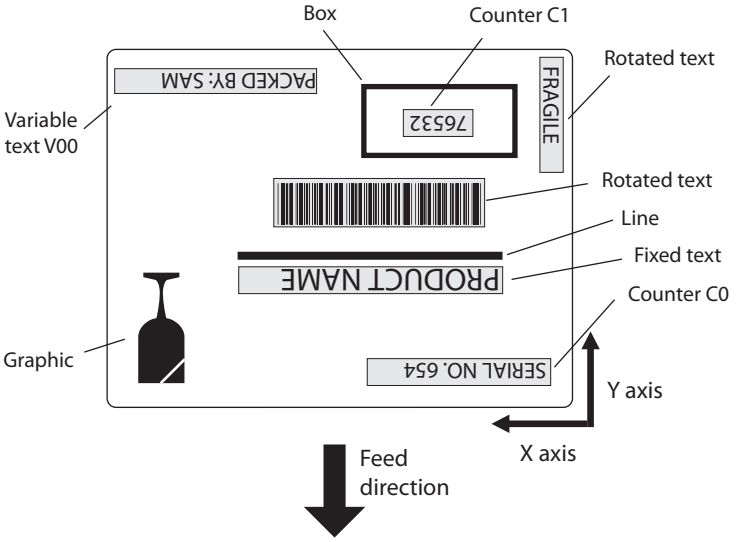
In addition to understanding the different types of printable fields on the printer, you need to know how to arrange them to define or change the format of a label. This section describes how you use ESim commands to position, size, rotate, and edit label fields.

Specifying Data for Fields

After you design a format for a bar code label, you need to provide the data to be printed in human-readable or bar code fields.

Field Positioning

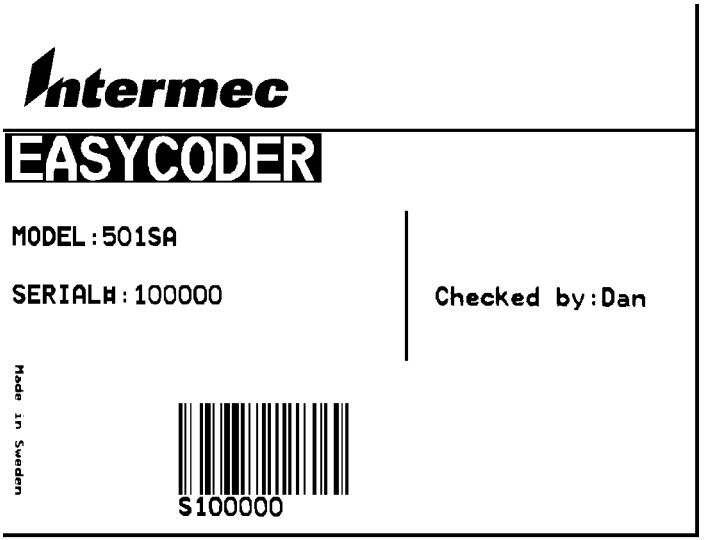
The printable area of the label forms a grid. The X-axis runs across the media and the Y-axis runs along the media path. Dots are the unit of measure for establishing position of the upper left corner of each field relative to a specified reference point. Text and bar code fields can be rotated around their insertion points. Lines, boxes, and graphics cannot be rotated. The entire print image can be rotated 180°. The illustration below shows coordinates for the default print direction (ZT).



Sample Label: *Field Positioning*

Creating a Sample Label Form

In this example you will create a label in direct mode and print it.



***Sample Label**: Illustration of the finished label.*

Note: The Intermec logo is not included in the software package. For this example, use any graphic with approximately the same size. You can also omit the GG command from the example until you are more familiar with it.

To create a label

1. Load the printer media. For help see the your printer's user guide. For example, if you are using a PF8 printer, see *PF8d/PF8t Printers User's Guide* (P/N 934-001-xxx).
2. Set the printer up to communicate with ESim. For help, see **"Communicating With the Printer" on page 8.**
3. Specify the correct label length and gap setting on the printer. For help, see **"Autosensing Mode" on page 10.**

4 Download the graphic in the example to the printer. For help, see **"GM - Store Graphics In Memory" on page 79.** Alternately, omit the GG (write graphic) command from the example.

5 Create and send command strings for the label form. For help, see the procedure, **"Creating Command Strings for the Label Formats" on page 21.**

Creating Command Strings for the Label Formats

Next, write the ESim command strings to create the label format. Use ESim commands to create and define each field in the format. Each type of field is defined by several parameters. For more information, see **"ESim Commands" on page 29.**

To create command strings for the label form

1 Open a text editor or word processor application.

2 Open Hyperterminal.

3 Enter Direct mode by turning the printer on.

4 Copy and paste the following text in the text editor, inserting a hard return when you see ↵

```
↵
N↵
X0,0,4,752,584↵
LO0,144,752,4↵
A40,400,1,1,1,1,N,"Made in Sweden"↵
A24,160,0,5,1,1,R,"EASYCODER"↵
A24,250,0,4,1,1,N,"MODEL: 501SA"↵
A472,312,0,4,1,1,N,"Checked by: Dan"↵
A24,312,0,4,1,1,N,"SERIAL#: 000001"↵
B280,440,0,1,2,3,96,B,"S00000"↵
GG24,12,"LOGO"↵
P1↵
```

Note: Make sure to delete any extraneous formatting marks. If necessary, substitute the curly quotation marks (") with straight quotation marks (")

5 Copy the text you just pasted in the text editor and paste it to HyperTerminal and press **Enter**.

The next table explains these values.

Values for the Sample Label

Command	Explanation
↵	CR/LF to start command structure.
N↵	Clear image memory.
X0,0,4,752,584↵	Draw a box.
LO0,144,752,4↵	Disable label taken sensor.
A40,400,1,1,1,1,N,“Made in Sweden”↵	Write a 90° text line of fixed data.
A24,160,0,5,1,1,R,“EASYCODER”↵	Write a text line of fixed data.
24,250,0,4,1,1,N,“MODEL: 501SA”↵	Write a text line of fixed data.
A472,312,0,4,1,1,N,“Checked by: Dan”↵	Write a text line of fixed data.
A24,312,0,4,1,1,N,“SERIAL#: 000001”↵	Write a text line of fixed data.
A24,312,0,4,1,1,N,“SERIAL#: 000001”↵	Write a text line of fixed data.
B280,440,0,1,2,3,96,B,“S00000”↵	Write a text line of fixed data.
GG24,12,“LOGO”↵	Write a graphic from graphics memory.
P1↵	Print command to image buffer, and prints 1 copy.

Complex Label Design

This section includes several examples of complex bar code label designs. Use these examples as a source of ideas for your own label formats.

Example with Storing Label Forms

In this example, you will editing a label and save it as a form in the printer's memory so you can retrieve it later. This example also includes counters and variables.

To create the command string:

1. Open a text editor or word processor application.
2. Open HyperTerminal.
3. Enter Form Edit mode by [X].
4. Copy and paste the following text in the text editor, inserting a hard return when you see ↵

```
↵
FK"TEST"↵
FS"TEST"↵
V00,15,N,"Enter Product name:"↵
V01,10,L,"Enter Model number:"↵
V02,8,N,"Checked by":"
C0,6,L,+1,"Enter Serial Number:"↵
X0,0,4,752,584↵
LO0,144,752,4↵
LO440,232,4,160↵
A40,400,1,1,1,1,N,"Made in Sweden"↵
A24,160,0,5,1,1,R,V00↵
A24,250,0,4,1,1,N,"MODEL:"V01↵
A472,312,0,4,1,1,N,"Checked by:"V02↵
A24,312,0,4,1,1,N,"SERIAL#:"C0"↵
B280,440,0,1,2,3,96,B,"S"C0↵
HH24,12,"LOGO"↵
FE↵
```

Note: Make sure to delete any extraneous formatting marks. If necessary, substitute the curly quotation marks (“) with straight quotation marks (")

5. Copy the text you just pasted in the text editor and paste it into HyperTerminal.
6. Press **Enter.** The printer is now saved in the printer's memory. You can retrieve it later on to edit or print.

The next table explains these values.

Values for the Sample Label

Command	Explanation
↵	CR/LF to start command structure.
FK“TEST”↵	Delete any existing form named TEST.
FS”TEST”↵	Start store form named TEST.
V00,15,N,“Enter Product name:”↵	Define first variable.
V01,10,L,“Enter Model number:”↵	Define second variable.
V02,8,N,“Checked by”:↵	Define third variable.
C0,6,L,+1,”Enter Serial Number:”↵	Define counter.
X0,0,4,752,584↵	Draw a box.
LO0,144,752,4↵	Draw a line.
LO440,232,4,160↵	Draw a line.
A40,400,1,1,1,1,N,“Made in Sweden”↵	90° text line containing fixed data.
A24,160,0,5,1,1,R,V00↵	Write a text line, first variable.
A24,250,0,4,1,1,N,“MODEL:”V01↵	Write a text line, second variable.
A472,312,0,4,1,1,N,”Checked by:“V02↵	Write a text line, third variable.
A24,312,0,4,1,1,N,“SERIAL#:“C0”↵	Write a text line with fixed data and first counter.

Values for the Sample Label (continued)

Command	Explanation
B280,440,0,1,2,3,96,B,“S”C0↵	Bar code with fixed data and first counter.
HH24,12,“LOGO”↵	Write graphic from graphics memory.
FE↵	Closing command to store form.

Example with Retrieving Label Forms

In this example, you will retrieve a label form in the printer’s memory. Before you perform this procedure, you must first create a form and store it. For help, see **“Example with Storing Label Forms” on page 23.**

Specifically, you will retrieve the form “TEST” that you created in the previous chapter.

Command	Explanation
↵	CR/LF to start command structure
FR“TEST” ↵	Retrieve form
? ↵	Call for variables
EASYCODER ↵	Substitute variable V00
501SA↵	Substitute variable V01
Dan↵	Substitute variable V02
100000↵	Counter start value C0
P1,2↵	Print 2 copies of a single label

Note: It is critical to the syntax to send exactly the same number of variable lines as defined for the label form.

The question mark (?) following the FR command is required for printing any fields edited in Form Edit mode that contain variables or counters. If no question mark is transmitted, all fields containing variable input are omitted from the printout.

Variables and counter start values must be defined, either by programming or by user input.

To have the printer prompt the operator to enter data, use the serial interface for communication between printer and host and send a UI command after each power-up, as shown.

Printer Prompt	Command	Explanation
	↵	CR/LF to start command structure
	UI	Enables prompts command (optional)
UI80,001		Printer returns code page status
	FR "TEST"↵	Retrieve form
	?↵	Call for variables
Enter Product name:	EASYCODER ↵	Substitute variable V001
Enter Model number:	501SA↵	Substitute variable V01
100001	100000↵	Reset, accept, or enter 2 counter start value C0
Number of label sets		Prompt
P1		Ignore
	P1↵	Enter P and quantity of labels
Copies of each label		Prompt
1	2↵	Enter number of copies ↵

Note: The optional Keyboard Display Unit automatically sends the UI command at power-up.

It is not necessary to reset the counter start value. The counter keeps track of the last number issued as long as the power remains switched on and the counter is updated according to instructions in the form.

Command	Explanation
↵	CR/LF to start command structure
FR“TEST”↵	Retrieve form
?↵	Call for variables
EASYCODER↵	Substitute variable V00
501SA↵	Substitute variable V01
Dan↵	Substitute variable V02
↵	CR/LF to use existing counter value
P1,2↵	Print 2 copies of a single label

Once a form has been retrieved, you can use it over and over again until you retrieve another form. All variable input data and counter values are stored in the volatile memory, which means it is lost when the printer loses power. If prompts are enabled, existing data and counter values are displayed on the screen after the related prompt. Any input data can be overwritten at will.

Command	Explanation
?↵	Call for variables in the same form
↵	CR/LF to use existing data in V00
↵	CR/LF to use existing data in V01
Sam↵	Substitute data in variable V02
200000↵	Substitute counter start value
P1,1↵	Print 1 copy of 1 label

4 ESim Commands

This chapter contains a comprehensive list of ESim commands.

ESim Commands

This chapter lists the various commands in alphabetical order. Each command is followed by a short description, the syntax for the command, an explanation of the parameters included in the syntax, and an example of how to use the command.

To learn more about ESim commands, see **"Added new content and reorganized chapters" on page 2.**

Commands that begin with ^ are listed alphabetically by the letter that follows ^.

About the Command Syntax

In the command syntax, there are a few conventions for substituting data or indicating how you can use data:

- p_1 - p_n indicates parameters, which are listed separately below the command syntax.
- Square brackets [ ] indicate optional parameters or data.
- Vertical lines | indicate alternatives
- "Name" indicates you need to enter the name of a form or graphic within the quotation marks such as "Intermec".
- "Data" indicates that the data could be from another source such as a .pcx file, a database, or data entry. "Data" designates the place in the command sequence to insert the data.

  Because firmware uses " " (ASCII 34 decimal), a special designator is required to print text or bar codes that include quotation marks. The backslash character \ (ASCII 92 decimal) serves that purpose. Examples are shown in the table below.

Printing Examples

Print	Enter
"	"\""
"ABC"	"\"ABC\""

Printing Examples (continued)

Print	Enter
\	"\\"
\code\	"\\ccde\\"

Note: If a 7-bit character set is selected, the quotation marks " " are not supported and all backslash \ characters are printed as entered.

- A trailing arrow → indicates that data continues on the next line.
- A leading arrow ← indicates data continued from the previous line.
- Brackets < > is an alternative method for writing unprintable ASCII characters, for example <ACK> = ASCII 06 decimal.

```
ABCDE ↵
99999 ↵
P1 ↵
```

^default - Restore Factory Defaults

Purpose: This command sets all parameters back to the factory default.

Syntax: ^default

Remark: This command returns the printer to its default setup when necessary; for example, prior to updating firmware. See **"Resetting to Factory Default Settings" on page 14** for the default value of setup parameters. After sending this command, wait at least two seconds before sending any further commands to ensure the printer has fully restarted.010

^@ - Reset Printer

Purpose: This command resets the printer.

Syntax: ^@

Remarks: The ^@ command resets the printer in the same way as a power off followed by a power on.

- the command must be followed by CR/LF to be correctly interpreted.
- the reset command is only available during command input, that is, not as data in .pcx graphics, soft fonts, or in format forms.
- the printer is unavailable for a short time during which all commands sent to the printer are lost.

Note: An error report has higher priority than other commands and is processed directly, both in position of normal command input and in position of any error recovery.

An ^@ command cannot be performed anywhere else, such as:

- during downloading of images, fonts, or forms.
- inside a variable input (?) or inside a string area (“”).
- when the input data buffer is full (> 8000 bytes).

? - Download Variables

Purpose: Use this command to signal to the printer that the data following are variable or counter values.

Syntax: ?

Remarks: This command is used by the host system to send data representing variables and/or counters to the printer after a stored for containing variables and/or counters has been retrieved. The amount of data following the question mark line must match exactly the total number and order of variables and/or counters for that specific form.

Note: If the ? command is omitted, no variables or counter values are printed.

Example:

```
FR"TEST7" ↵
? ↵
12345 ↵
abcde ↵
•
```

^A - Enter Pause Printing Mode

Purpose: When batch printing, this high-priority command finishes the current label and temporarily suspends printing any further labels in the print job.

Syntax: ^A

Remarks: When the printer is in Pause mode, the control LED slowly blinks green, orange, and green again. The reply at command US is by default <NAK>92<XOFF> (can be changed using eR command). No reply at UN command.

To resume printing a batch, send the command ^C or press the **Feed** button.

To cancel the remainder of the print job, use the ^B command.

This command can only be sent via the RS-232 or USB ports.

Example:

This example renders a box and orders the printer to print 4 copies. At command ^A, the printing is paused and continued again at command ^C.

```
X0,0,10,20,40 ↵
P4 ↵
^A ↵
^C ↵
```

; - Ignore Following Data

Purpose: Use this command to signal the printer to ignore all data between the line initiating the semicolon character (;) and the next line feed (LF)

Syntax: ;

Remarks: When you enter this command with the ";" characters, nothing is printed. However, when you enter this command without the ";" characters, the printer prints a box, a barcode, and text.

Example:

```
N
;X20,20,5,800,580
;A50,50,0,2,2,2,N,"UPC-E"
```

```
;B50,100,0,UE0,2,6,200,B,"123456"
P1
```

A - Printing Text

Purpose: Use the A command to print an ASCII text string.

Syntax: Ap_1, p_2, p_3, p_4, p_5, p_6, p_7,"DATA"

A Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (x) in dots.
p_2	Vertical start position (y) in dots.
p_3	Rotation: 0 = No rotation (left to right) 1 = 90° rotation (left to right) 2 = 180° rotation (left to right) 3 = 270° rotation (left to right) 4 = No rotation. Top to bottom. Asian fonts (p4=8) only. 5 = 90° rotation. Top to bottom. Asian fonts (p4=8) only. 6 = 180° rotation. Top to bottom. Asian fonts (p4=8) only. 7 = 270° rotation. Top to bottom. Asian fonts (p4=8) only.

A Command Parameter Descriptions (continued)

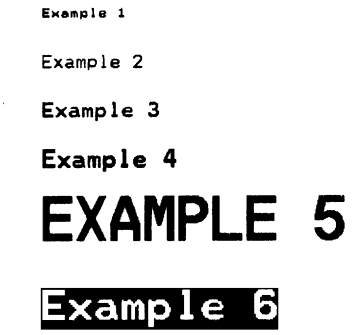
Parameter	Description	
p4	Font selection:	
	203.2 dpi (8 dots/mm)	**300 dpi (11.81 dots/mm)**
	1 = 20.3 cpi, 6 points (8 x 12 dots)	25 cpi, 4 points (12 x 20 dots)
	2 = 16.9 cpi, 7 points (10 x 16 dots)	8.75 cpi, 6 points (16 x 28 dots)
	3 = 14.5 cpi, 10 points (12 x 20 dots)	15 cpi, 8 points (20 x 36 dots)
	4 = 12.7 cpi, 12 points (14 x 24 dots)	12.5 cpi, 10 points (24 x 44 dots)
	5 = 5.6 cpi, 24 points (32 x 48 dots)	6.25 cpi, 21 points (48 x 80 dots)
	8 = Asian fonts:	(24 x 24 dots in a double-byte)
	Korean, Korea.24	(24 x 24 dots in a double-byte)
	Chinese GB, GB.24	(24 x 24 dots in a double-byte)
	Chinese BIG-5, Big5.24	(24 x 24 dots in a double-byte)
	Japanese, Japanese.24	(24 x 24 dots in a double-byte)
	Latin (PC4 only)	(24 x 24 dots in a single-byte, included in all .24 fonts) (dot size controlled by ES command.)

A Command Parameter Descriptions (continued)

Parameter	Description
p_5	Horizontal multiplier 1, 2, 3, 4, 5, 6, 7, 8
p_6	Vertical multiplier 1, 2, 3, 4, 5, 6, 7, 8, 9
p_7	N = Normal image R = Reverse image
"DATA"	Represents a fixed data field. When using Asian double-byte fonts, specify both bytes as ASCII decimal values, starting with the first value being larger than ASCII 127 decimal (ASCII 7F hex), or below ASCII 127 (ASCII 7F hex) decimal to specify a Latin character.

Example:

```
↵
N ↵
A50,0,0,1,1,1,N,"Example 1" ↵
A50,50,0,2,1,1,N,"Example 2" ↵
A50,100,0,3,1,1,N,"Example 3" ↵
A50,150,0,4,1,1,N,"Example 4" ↵
A50,200,0,5,1,1,N,"EXAMPLE 5" ↵
A50,300,0,3,2,2,R,"Example 6" ↵
P1 ↵
```



Cosecutive Example

Note: Font size 5 only supports uppercase characters, see example 5 in the label above.

Remarks: The "DATA" field can be replaced by or combined with the commands below:

DATA Field Command Descriptions

Command	Description
Variable:	
V*nn*	Prints the contents of the variable "*nn*" at this position, where n is a 2 digit number from 00-99.
Consecutive number counter:	
C*n*	Prints the value of counter "n" at this position.
C*n*±*x*	Prints the value of counter "n" at this position while setting the counters start value to "x". n and x are 1 digit numbers from 0-9. Enter + to increase the value or - to decrease the value.

Example 1: The command Cn±x in this example is used twice to increment the single counter by one (1) in each position (last two A-command lines).

Set the Form Step Value p4 to +3 for the counter Cn used in our example (see the C-command line) and refer to the C-Counter command.

```
↵
FK"TEST2" ↵
FS"TEST2" ↵
C0,5,L,+3,"Counter 0" ↵
A180,50,0,3,1,1,N,C0 ↵
A380,50,0,3,1,1,N,C0+1 ↵
A580,50,0,3,1,1,N,C0+2 ↵
FE ↵
```

Consecutive Number Counter Example

Example 2:

This example illustrates how fixed text, variable text, and counters can be used in text fields in Form Edit mode:

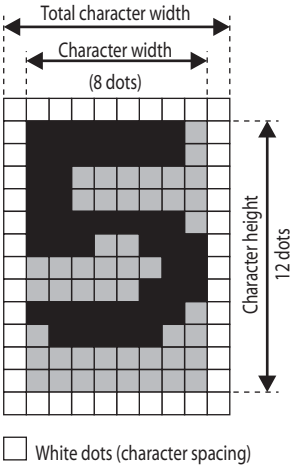
```
↵
FK"TEST1" ↵
FS"TEST1" ↵
V00,25,1,"Product name" ↵
C0,4,L,+L,"Start serial No" ↵
A50,50,0,4,1,1,N,"COMPANY NAME" ↵
A50,100,0,3,1,1,N,"Product: V00 ↵
A50,150,0,3,1,1,N,"Serial No: "C0
FE ↵
```

Combination of several options can be used in a single text field:

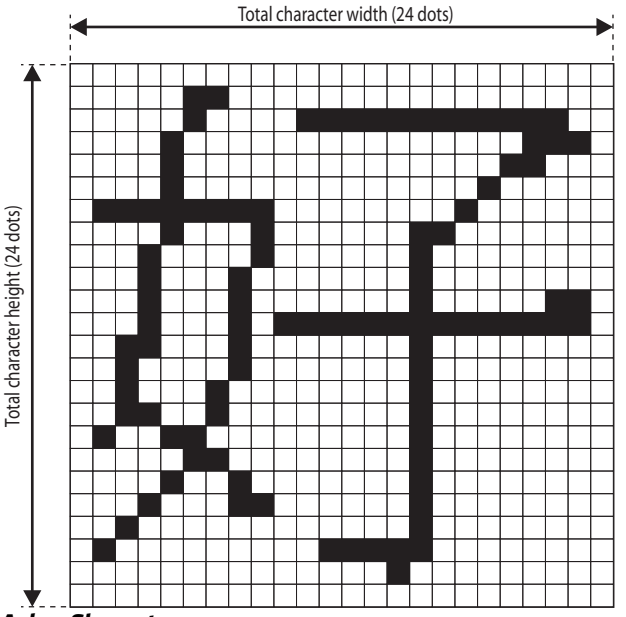
```
A50,300,0,3,2,2,R,"Deluxe"V01C1"Combo" ↵
```

This example writes the text "Deluxe", the contents of variable 01, the contents of counter 2, the text "Combo", and the contents of variable 01.

The Latin font characters (1–5) are dot-mapped differently than the Asian font characters (8). Since Asian characters do not have any built-in gap between individual characters, they are placed adjacently, whereas Latin characters include a single dot border space around each character. To create inter-character spacing for Asian fonts, use the i command.



Latin Characters



Asian Characters

The Asian fonts can print character strings running from top to bottom (p_3 = 4–7), as well as left to right (p_3 = 0–3). The characters are printed in the sequence that they are entered into the data field of the A command.

^B - Break Batch Printing

Purpose: When batch printing, this high-priority command finishes the current label, stops printing, and cancels the remainder of the print job. It also cancels print jobs that have already been paused using a ^A command.

Syntax: ^B

Remarks: The reply at US is by default <ACK> (can be changed using UCnn command).

This command can only be sent via RS-232 or USB ports.

Example:

This example renders a box and orders the printer to print 4 copies. At command ^B, the printing is stopped and cancelled.

```
X0,0,10,20,40 ↵
P4 ↵
^B ↵
```

B - Standard Bar Codes

Purpose: Use this command to print standard bar codes.

Syntax: Bp_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, "DATA"

B Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (x) in dots.
p_2	Vertical start position (y) in dots.
p_3	Rotation: 0 = No rotation 1 = 90° rotation clockwise 2 = 180° rotation clockwise 3 = 270° rotation clockwise
p_4	Bar code select. See the next example for reference.

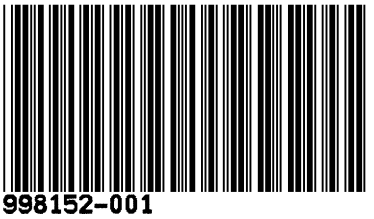
B Command Parameter Descriptions (continued)

Parameter	Description		
p5	**Bar Code Type:**	"p4"	"p5"
	Code 39 standard or extended	3	1-10
	Code 39 with check digit	3C	1-10
	Code 93	9	1-10
	Code 128 UCC case code	0	1-10
	Code 128		
	Automatic subset selection	1	1-10
	Manual selection of subset A	1A	1-10
	Manual selection of subset B	1B	1-10
	Manual selection of subset C	1C	1-10
	Codabar	K	1-10
	EAN8	E80	2-4
	EAN8 2 digit add-on	E82	2-4
	EAN8 5 digit add-on	E85	2-4
	EAN13	E30	2-4
	EAN13 2 digit add-on	E32	2-4
	EAN13 5 digit add-on	E35	2-4
	Interleaved 2 of 5	2	1-10
	Interleaved 2 of 5 with check digit	2C	1-10
	Interleaved 2 of 5 with human readable check digit	2D	1-10
	Postnet 5, 6, 8, and 11 digit	P	n.a
	Planet	PL	n.a
	UCC/EAN 128	1E	1-10
	UPC A	UA0	2-4
	UPC A 2 digit add-on	UA2	2-4
	UPC A 5 digit add-on	UA5	2-4
	UPC E	UE0	2-4
	UPC E 2 digit add-on	UE2	2-4
	UPC E 5 digit-add-on	UE5	2-4
	UPC SCC	2U	1-10
p6	Wide bar width in dots (2-30).		
p7	Bar code height in dots.		
p8	B = Human readables ON N = Human readables OFF.		
"DATA"	Represents a fixed data field. If empty, no part of the bar code is generated.		

Example:

This example produces a Code 39 bar code:

```
↵
N ↵
B50,50,0,3,2,6,200,B,"998152-001" ↵
P1 ↵
```



Code 39 Bar Code Example

Remarks: In all bar codes, the "DATA" field can be replaced or combined with the commands below:

DATA Field Command Descriptions

Command	Description
Variable:	
V*nn*	Prints the contents of the variable "*nn*" at this position, where *nn* is a 2 digit number from 00-99.
Consecutive number counter:	
C*n*	Prints the contents of counter "n" at this position.
C*n*±*x*	Prints the contents of counter "n" at this position while setting the counters start value to "x". n and x are 1 digit numbers from 0-9. Enter + to increase the value or - to decrease the value.

Example 1:

When labels with consecutive numbers are printed next to each other across the web, it is done by using a single counter in a single form.

The command Cn±x in our example is used twice to increment the single counter by one (1) in each position (last two B-command lines).

Set the Form Step Value p4 to +3 for the counter Cn used in our example (see the C-command line) and refer to the C-Counter command.

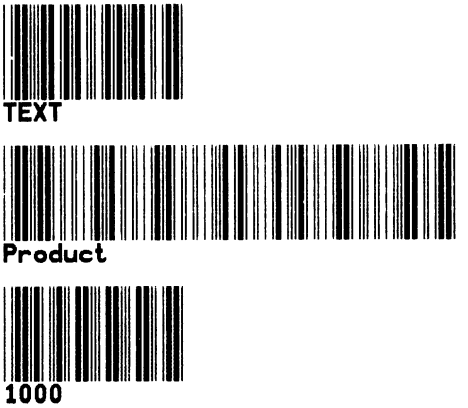
```
FK"TEST3" ↵
FS"TEST3" ↵
C0,6,L,+3,"Counter 0" ↵
B120
,50,0,2,3,6,100,B,C0 ↵
B320,50,0,2,3,6,100,B,C0+1 ↵
B520,50,0,2,3,6,100,B,C0+2 ↵
FE ↵
```

Example 1: *Consequtive Numbers Using a Single Counter*

Example 2:

This example illustrates how fixed text, variable text, and counters can be used in text fields in the Form Edit mode:

```
FK"TEST4" ↵
FS"TEST4" ↵
V00,25,1,"Product name" ↵
C0,4,L,+1,"Start serial No" ↵
B50,50,0,3,2,6,100,B,"TEXT" ↵
B50,200,0,3,2,6,100,B,V00 ↵
B50,350,0,3,2,6,100,B,C0 ↵
FE ↵
```



Example 2: *Fixed text, Variable Text and Counters*

You can use a combination of several options, for example:

```
B50,300,0,3,1,2,50,B,"Deluxe"V01C2"Combo" ↵
```

This example writes a Code 39 bar code containing the information "Deluxe", the contents of variable 01, the contents of counter 2, the text "Combo", and the contents of variable 01.

Bar Code 128 Family

The Code 128 family has three unique data character subsets: A, B and C. The choice of data character subset depends on the start character representing code A, B or C. The code subset can be redefined within the symbol by code set control characters A, B or C, or shift. In addition, a set of special functions are available via FNC1, FNC2, FNC3 and FNC4. All these can be invoked in the data field. The human readable part in the symbol, FNC and code subset control characters is represented by a space. The input data string is a fixed string of maximum 64 alpha-numerical characters.

Code 128 With Auto Selection of Subset and UCC/EAN

Code 128 and EAN128 use automatic subset selection of Subset A, B, or C, both at the start and within the bar code.

Code 128 With Manual Selection of Subset

By starting the Code 128 symbol with manual selection of subset A, B or C, the user has complete control of composing the symbol data output. By invoking special control characters in the data string, it is possible to switch between subsets or other special cases inside the symbol, as described in the next table.

String Invocation Rules

Command Type	Text Print	Bar Code Manual Selection		C128	Bar Code C128 Auto UCC/EAN128
Command	A	B	B	B	B, b[5]
Parameter p_4		1A	1B	1C	1,IE[4],1EC[5]
Starts with }		Start A	Start B	Start C	Start A, B, or C (+FNC1)
Invocation in String {	Text output {	Bar code output {	Bar code output {	Bar code output {	Bar code output {
\"	"	"	"	N/A[2]	"
\\	\	\	\	N/A[2]	\
\1	1	<FNC1>	<FNC1>	<FNC1>	<FNC1>
\2	2	<FNC2>	<FNC2>	NA[2]	<FNC2>
\3	3	<FNC3>	<FNC3>	NA[2]	<FNC3>
\4	4	<FNC4>	<FNC4	NA[2]	<FNC4>
\A	A	Ignore[1]	<Code A>	<Code A>	A
\B	B	<Code B>	Ignore[1]	<Code B>	B
\C	C	<Code C>	<Code C>	Ignore[1]	C
\S	S	<Shift>	<Shift>	N/A[2]	S
Char 06[3]	Char 06	Char 06	NA[2] in Code B	NA[2]	<FNC1>

Notes on the invocation rule table:

[1] Nothing happens if invocation code \A, \B, or \C refer to the same subset marked “Ignore”.

[2] Not applicable combinations cause an error 01.

[3] Char hex 06 in string is a legacy for FNC1 invocation from earlier bar code 128 implementations.

[4] EAN/UCC symbology always included FNC1 in the first data position and does not support other FNCs.

[5] Linear component of 2D bar code EAN/UCC Composite-Code (Data 1).

b - Two-Dimensional Bar Codes, General Part

Purpose: Use this command to print complex bar codes such as DataMatrix, PDF417, MaxiCode, and QR Code. The command consists of a leading set of general position and bar type select parameters and a trailing code-specific part defining the appearance of the bar code and its input data.

Syntax: bp_1, p_2, p_3, [Code specific options]

b Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (x) in dots.
p_2	Vertical start position (y) in dots.
p_3	Code type: C = Selects EAN/UCC Composite-Code D = Selects DataMatrix M = Selects MaxiCode P = Selects PDF417 Q = Selects QR Code [Code specific options] For help, see **“b - EAN/UCC Composite-Code” on page 47**.

Remarks: The standard program packages contain all the two-dimensional bar codes mentioned above.

If the amount of data does not fit in the area specified, the indicator turns orange, indicating an error.

b - EAN/UCC Composite-Code

Purpose: The following EAN/UCC Composite-Code bar code specific options should append the general part of the two-dimensional bar code command (indicated by the italicized characters, see **"b - Two-Dimensional Bar Codes, General Part" on page 46** for more information. Presently, only EAN/UCC-128 with CC-C is supported.

Syntax: bp_1,p_2, p_3, p_4,o,x,y,s,1,[B,][P][F,]M,"$Data_1$ | $Data_2$"

b - EAN/UCC Command Parameter Description

Parameter	Description
p_4	Selection of bar code type (linear part and two-dimensional part) 1EC and EAN/UCC-128 with CC-C
o	0 = No rotation 1 = 90° rotation clockwise 2 = 180° rotation clockwise 3 = 270° rotation clockwise Limit is 0-3. Default is 0.
x	Module width of pixel size in dots, magnification of both linear and 2D composite component. Limit is 1-10 Default is 2.
y	Bar height on linear part in dots. Limit is 2-999. Default is 100.

b - EAN/UCC Command Parameter Description (continued)

Parameter	Description
Y	Bar height on two-dimensional composite part in dots. Minimum height is 2*x, nominal is 4*x. Limit is 2-999. Default is 4 (2*x).
s	Separator pattern height in dots between linear component and two dimensional composite component. Limits is 1-60 (minimum s = 1*x, maximum s = 6*x). Default is same as x.
l	Manually controlled column count on CC-C code. If not set, the column count is optimized to linear bar width. Limit is 1-30. Default is NA.
B	Flag for human readable text of linear component part, to present within the same rules as to the single bar code. Font selection depends on the bar code type. It is similar to B-command parameter p_8, see **"B - Standard Bar Codes" on page 40**. Default is no B flag.
px, y, m	Human readable text of two-dimensional composite component part appended by additional variables for any position relocation around the composite bar code: x = horizontal start location: max is 4 digits. y = vertical start location: max is 4 digits. m = maximum characters per line. The max is 3 digits, and 0 = no limit. Fixed Font selection 3 without any multiplier used. CR, LF in data causes the rest of the text to wrap around to the next line. Similar design as b-command parameter p on PDF417. Limits are x and y position limitations. Default is no p.

b - EAN/UCC Command Parameter Description (continued)

Parameter	Description
F	Restrain control filter, to reduce input data information, by deleting special characters for the bar code rendering, but let them be a part of human readable text. Deleted characters are ( ) space CR and LF. Filters only hex 0ah, 0dh, 20h, 28h, 29h. Default is no F.
M	Manually controlled Pipe character: Separator between data of linear and two-dimensional composite part. Use this parameter only in exceptional case. Limit is any printable character. Default is M|.
$Data_1$|$Data_2$	The data area represents a string data field surrounded by quotation-marks. Max data length is relative chosen model type and data mode. Invocation code in string follows the rules for selectable Code 128, see **"B - Standard Bar Codes" on page 40**. FNC2, FNC3, and FNC4 are not allowed in composite code.
$Data_1$	String of primary data to linear component. Limit is 48 digit maximum.
|	Data separator pipe character.
$Data_2$	string of secondary data to two-dimensional composite data. Limit is all characters are in ISO 646.

Errors occur if:

- data is not suitable to optional parameters => error 01 (syntax error).
- data is too long or out of range => error 03 (at length error).
- data does not fit in area specified => error 50.

Example:

```
N ↵
b10,20,C,1EC,x4,Y12,B,p40,210,0,F,"(01)938123456
78901|(10)ABCD123456(410)3898765432108" ↵
P
```

EAN/UCC Command Example

b - DataMatrix

Purpose: The following DataMatrix specific options should append the general part of the two-dimensional code command indicated by the italicized characters, see **"b - Two-Dimensional Bar Codes, General Part" on page 46** for more information.

Syntax: $bp_1,p_2,p_3,[P_4,\text{"DATA"}]$

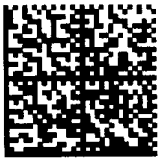
b DataMatrix Command Parameter Descriptions

Parameter	Description
P_4	Narrow bar from 1-15
"DATA"	Represents a fixed data field, maximum 125 characters long

Example:

```
N ↵
b40,80,D,5,"12345678901234567890123456789012345
78901234567890123456789012345678901234567890
```

```
12345678901234567890" ↵
P1 ↵
```



DataMatrix Command Example

b - PDF417

Purpose: The following PDF417 bar code specific options should append the general part of the two-dimensional code command indicated by the italicized characters, see **"b - Two-Dimensional Bar Codes, General Part" on page 46** for more information.

Syntax: bp_1,p_2,p_3,[www,hhh,s,c,p,f,d,x,y,r,l,t,o],"DATA"

b - PDF417 Command Parameter Descriptions

Parameter	Description
www	Maximum print width in dots (3 digits).
hhh	Maximum print height in dots (3 digits).
s	Sets error correction level. Legal values are 0-8. If level is not specified, a level that generates about 1/8 as many ECC code words as data code words is selected.
c	Selects data compression method: 0 = Selects auto-encoding (default) 1 = Selects binary mode
p	Print human readable code appended by additional variables: *xxx* = Horizontal start location (3 digits). *yyy* = Vertical start location (3 digits). *mmm* = Maximum characters per line (3 digits).
f	Center pattern in area: 0 = The pattern prints upper left justified in the area defined by the w and h values. 1 = The pattern is printed in the middle of the area defined by the w and h values (default).

b - PDF417 Command Parameter Descriptions (continued)

Parameter	Description
d-	Print code words: 0 = Values of code words not printed (default). 1 = Values of code words printed.
x-	Module width. Legal values are 2-9.
y-	Set bar height. Legal values are 4-99 dots high.
r-	Maximum row count, refer to PDF417 specifications.
l-	Maximum column count, refer to PD417 specifications.
t-	Truncated flag: 0 = Not truncated. 1 = Truncated.
o-	Rotation: 0 = 0° rotation clockwise. 1 = 90° rotation clockwise. 2 = 180° rotation clockwise. 3 = 270° rotation clockwise.
“DATA”	Represents a fixed data field.

Remarks: If parameter *www* (maximum print width) gives less space than required by the sum of parameters x- (module witch) and l- (maximum column count), error condition 50 occurs.

Also, if parameter *hhh* (maximum print height) gives less space than required by the sum of parameters y- (set bar height) and r- (maximum row count), error condition 50 occurs.

Example:

```
N ↵
b40,40,P,400,300,p40,340,20,f1,x3,y10,r60,l5,“AB
CDEFGHIJK1234567890abcdefghijk” ↵
P1 ↵
```

ABCDEFGHIJK123456789
0abcdefghijk

PDF417 Bar Code Example

Note: The last parameter in the b command (l5) is lowercase L and the digit 5, not 15.

b - QR Code

Description: QR Code is a matrix symbology defined in AIM International ITS/97-001.

QR Code Model 1 and Model 2 Descriptions

Characteristics	Model 1	Model 2
Model version	Original	Enhanced
Symbol size in cell (increment of 4 cells)	21*21 to 73*73	1‘*21 to 177*177
1. Numeric data modes: Digits 0-9	Maximum is 1167 characters.	Maximum is 7089 characters.
2. Alphanumeric data mode: Digits 0-9, upper case letters A-Z, and 9 other characters	Maximum is 707 characters.	Maximum is 4296 characters.
3. 8-bit byte data mode: JIS 8-bit character set (Latin and Kana) in accordance with JIS X 0201	Maximum is 486 characters.	Maximum is 2953 characters.
4. Kanji data mode: Shift JIS X 0208	Maximum is 299 characters.	Maximum is 1817 characters.
5. Mixing mode: Mix of mode 1-4 above	N/A	Applicable

Note: The maximum data length in ESIM is approximately 780 bytes.

Error Correction

Four levels of Reed-Solomon error correction:

- L = 7%
- M = 15%
- Q = 25%
- H = 30%

Masking (Intrinsic)

This enables the ratio of dark to light modules in the symbol to b approximated to 1:1 whilst minimizing the occurrence of arrangements of close modules which would prevent efficient decoding.

The QR bar code specific options should append the general part of the two-dimensional bar code command (indicated by the italicized characters, see **"b - Two-Dimensional Bar Codes, General Part" on page 46** for more information.

Syntax: bp_1, p_2, p_3,[cn,mn,on,sn,xn,ynn],"DATA"

Masking Parameter Descriptions

Parameter	Description
c	Fixed data mode character set: 1 = Numerical data mode 2 = Alphanumerical data mode 3 = 8-bit data mode (JIS 0201) 4 = Kanji data mode (JIS 0208) 5 = Mixing mode (any of mode c1-c4, model type 2) Model 1 default = Most optimal alternative of c1 to c4. Model 2 default = c5. Internally during rendering the QR Code, the mode can be switched within a bar code to minimize the bit stream area. By using parameter cn, the data mode character set is fixed.
m	Model type is defined and unchanged within one QR Code. 1 = Original version 2 = Enhanced version (recommended). Default.

Masking Parameter Descriptions (continued)

Parameter	Description
o	Rotation: 0 = 0° rotation clockwise. Default. 1 = 90° rotation clockwise. 2 = 180° rotation clockwise. 3 - 270° rotation clockwise.
s	Set correction level: L = 7% (default) M = 15% (default) Q = 25% (default) H = 30% (default)
x	Masking factor 0-7 or 8 (auto). Default is 8.
y	Cell pixel size magnification 02-64. Default is 10.
"DATA"	Represents a fixed data field. Maximum data length is relative chosen model type and data mode, but is limited to approximately 780 bytes. Ordinary string controls, like \\for\and\"for".

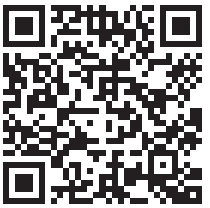
Errors: If data is not suitable to optional parameters, Error 01 (syntax error) occurs.

If data is too long or out of range, Error 03 (data length error) occurs.

If data does not fit in area specified, Error 50 occurs.

Example

```
N ↵
b40,40,Q,sM,x1,"ABCDEFGHIJKLMNOPQRSTUVWHYZ123456
78901234567890123 4ABCDEFGHIJKLMNOPQ
RSTUVWHYZ1234" ↵
P1 ↵
```



QR Code Example

C - Counter

Purpose: Use this command to define one of maximum 10 automatic counters used in consecutive numbering applications, such as serial numbers. Counters can only be used in the Form Edit mode, and not in the Direct mode.

Syntax: Cp_1,p_2,p_3,p_4,[p_5,],"PROMPT"

C- Counter Parameter Descriptions

Parameter	Description
p_1	Counter number (0-9).
p_2	Maximum number of digits for the counter (0-29).
p_3	Field justification: L = Left justification. R = Right justification. C = Center justification. N = No justification.
p_4	Step value. Plus or minus sign followed by a single digit (1-9): + Increase. - Decrease.

C- Counter Parameter Descriptions (continued)

Parameter	Description
p5	Alphanumerical support (optional): N= Numerical support. Anything other than digit and leading spaces in DATA causes error 03. A = Alpha support: Base 10 on digits, base 26 on letters (default). Anything else than digit, leading spaces, and uppercase alpha characters in DATA causes error 03. Wrap around: 0 ?g 9 goes back to 0. A g Z goes back to A. B = Alphanumerical support: Base 36 Anything other than digit, leading spaces, and uppercase alpha characters in DATA causes error 03. Wrap around: 0 g 9 gA g Z g0. 9 goes to A. Z goes back to 0.
[-]	A single leading minus sign in the prompt field causes the prompt to be sent one time only after the form is retrieved (Keyboard display unit only, see below).
[--]	A double leading minus sign in the prompt field causes the prompt to be suppressed (Keyboard display unit only, see below).
"PROMPT"	An ASCII text field to transmit to the Keyboard display unit or host via the serial interface each time a form containing this command is retrieved. It usually requests the operator to enter the starting value for the counter.

Remarks: This command is used in forms that require sequential numbering. When initializing counters, they must be defined in order (for example C0, C1, C2, etc.) after possible variables.

To print the contents of the counter, the counter number (C0- C9) is entered in the "DATA" field of A (Print Text) or B (Print Bar Code) commands.

Prompts only display if a UI command has been issued after last power-up. The Keyboard display unit sends the UI command automatically.

The field justification parameter (p_3) affects the way the counter is printed. When p_3 = L, R, or C, the counter value is printed left, right or center justified in an area with a width defined by p_2 (number of digits). If no justification is selected (p_3 = N), the field is truncated from the right side so as to not exceed the set maximum field length, which may be useful when using a counter as input data to a bar code.

If the start value entered, when the form is retrieved for printing, is started by one or several zeros (0), the entire area specified by p_2 (number of digits) is padded with leading zeros and p_3 (field justification) has no effect.

Note: If a single counter is incremented several times on the same form, then the step value p_4 must be set to the number of times the counter is used in the form or equivalent to what the step values for the single counter add up to in this form. A Cn±x command must also be used when designing the actual form. See the A and B commands.

The table below illustrates how leading space characters (“ ”) in DATA are influenced by next character at wrap around. If next position is a digit with wrap around (9 → 0), space is incremented to digit 1. If next position is a letter with wrap around (Z → A), space is incremented to letter A.

C- Counter Command Parameters

P_5	Counter Command	Start Data	Data after p4 =+1		Data after p4 =+2	
N	C0,3,C,+1,N,“Numeric al”	“99”	g	“100”	g	“101”
		“999”	g	“000”	g	“001”
A	C0,3,C,+1,A,“Alpha” (if no P5 parameter is included, method A is selected by default).	“ A9”	g	“ B0”	g	“ B1”
		“ Z9”	g	“AA0”	g	“AA1”
		“0Z9”	g	“1A0”	g	“1A1”
		“ ZZ”	g	“AAA”	g	“AAB”
		“ZZ9”	g	“AA0”	g	“AA1”
B	C0,3,C,+1,B,“Alpha-num”	“ 99”	g	“ 9A”	g	“ 9B”
		“ A9”	g	“ AA”	g	“ AB”
		“ 9Z”	g	“ A0”	g	“ A1”
		“ ZZ”	g	“100”	g	“101”
		“ZZZ”	g	“000”	g	“001”

Example:

```
FK“TEST5” ↵
FS“TEST5” ↵
C0,5,L,+1,“Start value CNT 0” ↵
C1,5,R,+1,N,“Start value N-CNT 1” ↵
C2,5,C,+1,A,“Start value A-CNT 2” ↵
C3,5,N,+1,B,“Start value B-CNT 3” ↵
A50,050,0,3,1,1,N,“Cnt Default, left →
→ justified :“C0”:” ↵
A50,100,0,3,1,1,N,"Cnt Numerical, right →
→ justified :“C1”:” ↵
A50,150,0,3,1,1,N,“Cnt Alpha, center →
→ justified :“C2”:” ↵
```

```
A50,200,0,3,1,1,N,"Cnt Alpha-num, not →
→ justified :"C3":"
FE ↵
FR "TEST5" ↵
? ↵
A9 ↵
99 ↵
ZZ9 ↵
ZZ9 ↵
P3 ↵
```

Protect Counters

When the optional Keyboard display unit (KDU) is used, the label form can be designed to "skip" a consecutive number prompt, thereby protecting the data. This feature is useful when the counter represents a serial number or other number that should not be repeated or changed.

If one (1) minus sign is the first character of the prompt, the prompt appears only once after the form is retrieved.

Example 1:

```
C0,10,L+1,"-Enter Serial Number:" ↵
```

If two (2) minus signs are the first two characters of the prompt, the prompt is never displayed.

Example 2:

```
C0,10,L+1,"- -Enter Serial Number:" ↵
```

The protected consecutive number is accessed and modified from the optional Keyboard display unit only.

To access the protected counter

1. Enter the following when the Keyboard display is showing:

```
FORM - retrieve form
F2 - list forms vx.x
```

2. (Optional) Press the **Exit** key to display the above.
3. Press the **F1** key.

4. Press **4**, **9**, **1**, and **6**.
5. Press the **Form** key.
6. Key in the form name and press **Enter** to retrieve.
7. Enter or modify the consecutive number.
8. When complete, print label to store new number in memory.

C - Cut Immediate

Purpose: Use this command to make the cutter perform a cutting cycle without printing a form.

Syntax: C

Remarks: The command C is used for two purposes. C appended by parameters is used to define counters in the Form Edit mode, whereas C without any appending parameters is used to initiate a cutting operation.

C (Cut Immediate) cannot be used inside a form or in connection with a the Keyboard display unit.

To perform self-cleaning of the cutter blade, issue five consecutive C commands without any media loaded.

Example:

To perform a cutting cycle, enter the command below:
C ↵

^C - Exit Pause Printing Mode

Purpose: This high-priority command makes the printer exit the Pause Printing mode, that is, continue printing the remainder of a print job after having been temporarily stopped using a ^A command.

Syntax: ^C

Remarks: When the printer is in Pause Printing mode, the control LED slowly blinks green, yellow, and green again. The reply at command US is by default <XON> (can be changed using eR command). No reply at UN command.

Another way to resume printing a batch is to press the **Feed** button.

This command can only be sent via the RS-232 or USB ports.

Example:

This example renders a box and orders the printer to print 4 copies. At command ^A, the printing is paused and continued again at command ^C.

```
X,0,0,10,20,40 ↵
P4 ↵
^A ↵
^C ↵
```

D - Density

Purpose: Use this command to select the print density.

Syntax: Dp_1

D- Density Parameter Descriptions

Parameter	Description
p_1	Density settings (0-15). Default is 10. 0 is the lightest printing and 15 is the darkest.

Remarks: The density command is used to control the energy to the printhead. A number of factors affect the actual darkness of the printout:

- Direct thermal printing or thermal transfer printing.
- Print speed.
- Different brands of direct thermal media.
- Different combination between transfer ribbons and receiving face materials.
- Different ambient temperature and humidity.

The printed information may also require the density to be adjusted. Typically, this applies to different bar code orientations and densities. Refer to the tables in the pages that follow for recommended initial settings.

Test after the print speed has been set, see **"S - Speed Select" on page 110**, and make further adjustments until you have found the settings which best apply to your unique application.

Example:

To select a printhead density of 9, enter the command below:

```
D9 ↵
```

Recommended density settings are identified in the following tables. Further adjustments might be necessary depending on print speed, bar code density, orientation, and ambient temperature/humidity conditions.

Recommended Density Settings For Direct Thermal Printing

Label/Tag Type	Recommended Density at Speed S = 2	Maximum Speed
Duratherm II	D10	S3
Duratherm II Tag	D9	S1
Duratherm Lightning	D9	S3
Duratherm IR	D7	S3
Thermal Top	D8	S3
Thermal Eco	D8	S3
Thermal Top Board	D11	S2
Thermal Eco Board	D7	S2
Thermal IR	D12	S3
Thermal Top High Speed	D6	S3
Duratherm Lightning	D9	S3

Recommended Density Settings For Thermal Transfer Printing

Label/Tag Type	Ribbon Type	Recommended Density at Speed S = 2	Maximum Speed
Duratran II	Standard	D4	S3
Duratran II Tag	Standard	D4	S2

Recommended Density Settings For Thermal Transfer Printing

Label/Tag Type	Ribbon Type	Recommended Density at Speed S = 2	Maximum Speed
Duratran II	Premium	D5	S3
Duratran II Tag	Premium	D6	S2
Kimdura	Premium	D6	S3
Matte Polyester	Premium	D6	S3
Gloss Polyester	Super premium	D7	S3
TTR Uncoated	GP02	D1	S2
TTR Matte Coated	HP05	D6	S3
TTR Premium	HP05	D4	S3
TTR Premium Board	HP05	D7	S1
TTR Polyethylene	HP05	D2	S3
TTR Gloss Polyethylene	HP05	D7	S3
TTR High Gloss White Premium	HP05	D7	S3
TTR Matte Coated	HP07	D7	S3
TTR Premium Board	HP07	D8	S1
TTR Polyethylene	HP07	D4	S3
TTR Gloss Polyethylene	HP97	D8	S3
TTR High Gloss White Premium	HP07	D9	S3
TTR High Gloss Polyester	HR03	D7	S3

^D - Remaining Labels

Purpose: Use this high priority commto make the printer return the number of labels remaining to be printed in a batch print job.

Syntax: ^D

Remarks: The reply at command US is by default Pnnnn<CR><LF>, where *nnnn* is the number of remaining labels.

This command can only be sent via the RS-232 or USB ports.

Example:

This example renders a box and orders the printer to print 4 copies. At command ^A, the printing is paused and interrogated for remaining number of labels. Printing is continued again at command ^C.

```
X0,0,10,20,40 ↵
P4 ↵
^A ↵
^D ↵
^C ↵
```

EI - List Soft Fonts

Purpose: Use this command to print a list of all soft fonts that are stored in memory.

Syntax: FE

Remarks: This command is related to ES (Store Soft Fonts) and EK (Delete Soft Fonts).

Example:

To print a soft font list, enter the command below:

```
EI ↵
```

```
Soft font information:
z:011char,107dots,0dir
y:224char,039dots,0dir
x:224char,034dots,0dir
Soft font memory left:086K
```

EK - Delete Soft Font

Purpose: Use this command to delete soft fonts from memory.

Syntax: EK[“name”|“*”]

Remarks: Soft fonts are stored using the ES command and listed using the EI command.

You can also delete soft fonts from the printer using a program such as Intermec LabelShop or Intermec InterDriver.

Example:

```
EK"a" ↵
EK"*" ↵
```

ES - Store Soft Font

Purpose: Use this command to download and store soft fonts in memory.

Syntax: ES"name"p_1p_2,$p_3a_1b_1c_1$"$data_{1...}a_nb_nc_n$"$data_n$"

ES Command Parameter Descriptions

Parameter	Description
$name_{1-n}$	Name of the soft font (one lowercase letter only in the range a-z). Lower case named fonts minimize soft font memory usage to only store fonts downloaded and have 256 character limit.
p_1	Number of characters to be downloaded using hexadecimal coding. Range 00-FF hex (1-256 characters per soft font set).
p_2	Character rotation using hexadecimal coding: 00 hex =0° and 180° 01 hex = 90° and 270° clockwise 02 hex = All four directions (2 pairs)
p_3	Font height measured in dots and specified using hexadecimal coding. Range 00-FF hex. Font height includes ascenders and descenders of character and need to fit in the character cell of 256 dots = 32.03 mm (1.26 in).
a	Map position of character using hexadecimal coding. Range 00-FF hex.
b	Spacing to next print character in dots using hexadecimal coding.Range 00-FF hex. Must be greater than or equal to the character width specified by parameter c.
c	Width of character in dots using hexadecimal coding. Range 00-FF hex.

ES Command Parameter Descriptions (continued)

Parameter	Description
"data"	p3 x c1 = bit map data (in bytes). Data is received in bytes on a line by line basis. The 0,0 cell map position is in the top left corner of the map as viewed in the 0 degree rotation. Repeat parameters a, b, c, and data for each character until all characters in the set have been downloaded. For fonts with the rotation parameter p_2 set to 02 hex (all directions), repeat the individual font character download for each 90° rotated character from the start of the character set until all rotated characters in the set have been downloaded. The number of individual character maps downloaded is double the characters in the font set (p_1).

Remarks:

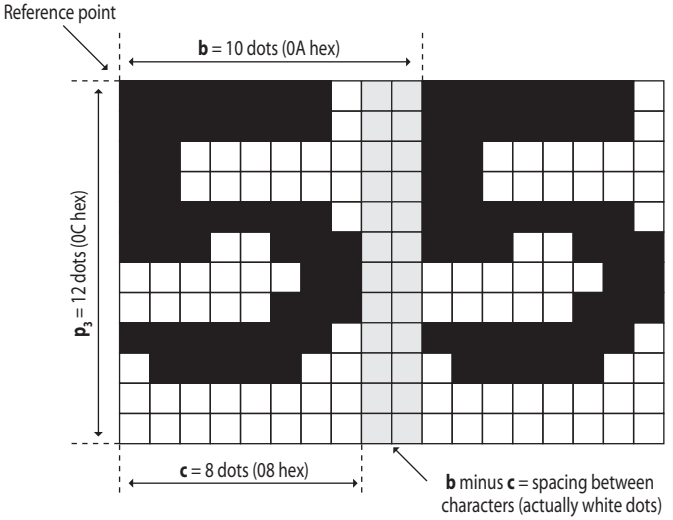
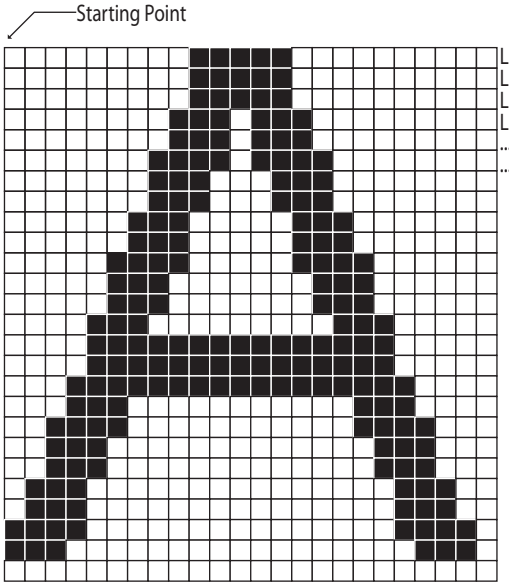


Illustration of Parameters p_3, b, and c

The black and white bitmap that represents the character must be converted to hexadecimal code. The bitmap is described line by line from left to right, starting from the upper left corner of the character cell. A white dot is represented by 0 and a black dot by 1. Each byte (8 dots) forms a binary number that is converted to hexadecimal code. The last byte in a line is padded with zeros to complete the line and data byte. The data is the sent to the printer as a continuous string of hexadecimal byte representations in line order.

You can also download soft fonts to the printer using Intermec LabelShop or Intermec InterDriver.

You can list soft fonts using the EI command.



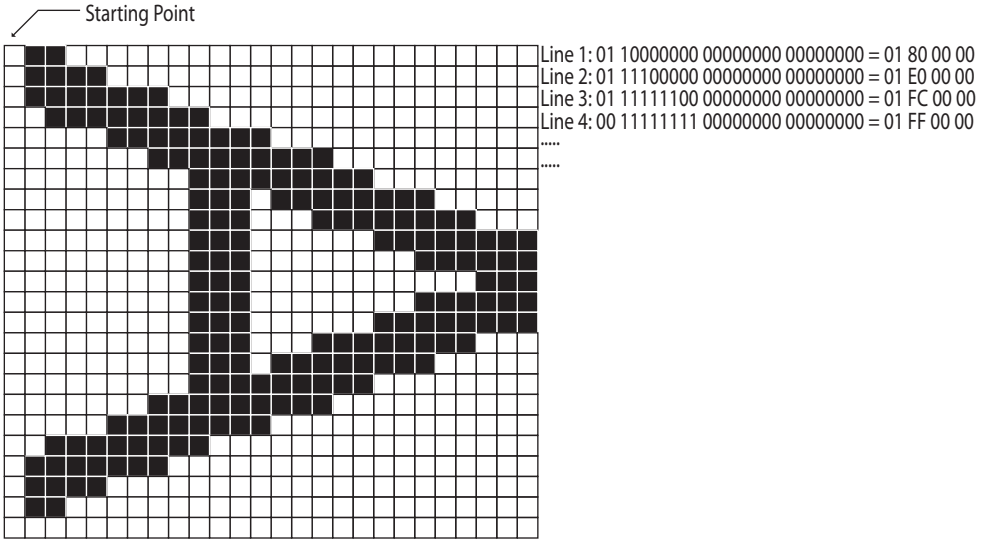


Illustration of a Character in 0° and 90° Rotation is Downloaded to the Printer

^ee - Immediate Error Report

Purpose: Use this command to force the printer to report error and status immediately via the RS-232 or USB port.

Syntax: ^ee

Remarks: After the command is sent into printer via the RS-232 or USB interface, the printer returns an error and status report on the serial port once it when reaches a state of normal-command-input or error-waiting-recovering.

Command must end with <CR> or <LF> to be correctly executed.

The printer replies to the host via serial port in one of the following formats:

1. If no error code is available (normal case):

   `00<CR><LF>`

   00 = Status code OK

2. If only one error code is available:

   `XX<CR><LF>`

   XX = Error or status code

3. If more error or status codes are available:

   `XX,YY,ZZ..<CR><LF>`

   XX YY ZZ.. = Error or status codes.

Note: An error report has higher priority than other commands and is processed directly, both in position of normal command input and in position of any error recovery.

An ^ee command cannot be performed:

- during downloading of images, fonts, or forms.
- inside a variable input (?), or inside a string area (“”).
- when the input data buffer is full (> 8000 bytes).

At position error-waiting-recovering, the command ^ee must be sent into the printer via the RS-232 or USB interface to get an error report.

Example:

Command	Manual Action	Reply	Comments
US		<ACK>	Enables error reporting.
AA			Command sent with syntax error (01).
	Open cover	<NAK>11<XOFF>	Manual action to generate error (11). Printer enters error-waiting-recovering state.
UV			Queues command to print product ID.
^ee		01,11<CR><LF>	Command reports all errors/status.
	Close cover	<XON>1-972600-33, g g Base3.33<CR><LF>	Manual action clears error 11. Command **UV** performed.
P		<NAK>01<XOFF>	Print command reports syntax error 01.
	Press **Feed** button	<XON>	Manual action to clear error status.

eR - User-Defined Error/Status Character Control

Purpose: Use this command to control error messages format when command US has enabled the status reporting feature and also when some high priority error types occur even though command UN has disabled status report.

Syntax: eRp_1,p_2,[,p_3]

eR Command Parameter Descriptions

Parameter	Description
p_1	Reply error action single character when error occurs: Value of p_1 is one single ASCII character, except hex 00. Default is 0.

eR Command Parameter Descriptions (continued)

Parameter	Description
p_2	Mode of User Defined Error/Status Character reply (one ASCII numerical: p_2 = 0 Mode of Reply Default, where error number is NN: Output at error action: <NAK>NN<XOFF> Output at error recovery: <XON> p_2 = 1 Mode of Reply only with character, defined by p_1: Output at error action: <p_1><CRLF> Output at error recovery: <p_3><CRLF> p_2 = 2 Mode of Reply with character p_1 and error number NN: Output at error action: <p_1>NN<CRLF> Output at error recovery: <p_3>00<CRLF> p_2 = Mode of <XOFF> and <XON> replacement: Like default mode (0), but with all <XOFF> replaced by p_1 and all <XON> replaced by optional p_3: Output at error action: <NAK>NN<p_1> Output at error recovery: <p_3>NN
p_3	Optional recovery action single character: The normal recovery character <XON> is replaced by p_3. Value of p_3 is one single ASCII character, except hex 00. If no p_3 is available, p_1 is used instead as a recovery action character.

Remarks: Exception of output: Error 07 "Out of media or ribbon," is added after 07 with P*nnn* or R*nnn*, where *nnn* = number of remaining labels:

Output at error media action (mode 0):

<NAK>07Pnnn<XOFF>

Output at error ribbon action (mode 0):

<NAK>07Rnnn<XOFF>

Output at error recovery:

<XON>

Mode 1, 2, and 6 changes the output in a similar way.

All parameters are saved in flash memory. If more than one error occurs at the same time, there is an output for each error recovery, like <p_1>00<CRLF> on mode 2. For more information on error handlings see, **"Error Handling Principles" on page 156**.

Example:

Command	Manual Action	Reply	Comments
US 8		<ACK>	Enables error reporting.
eRC,2,Q 8			Reply error with character "C" and error NN and at recovery with character "Q".
	Open cover	C11<CRLF>	Manual action generates error 11.
	Close cover	Q00<CRLF>	Manual recovery on error 11.

f - Cut Position

Purpose: Use this command to adjust the cutting position along the y-axis in relation to the media according to other characteristics of individual printers and batches of media.

Syntax: fp_1

f Command Parameter Descriptions

Parameter	Description
p_1	Cut position index measured in dots: **203.2 dpi (8 dots/mm):** Recommended: 070 - 130 Minimum/Maximum: 020 - 180 Default is 100 **300 dpi (11.81 dots/mm):** Recommended: 050- 150 Minimum/Maximum: 000 - 200 Default is 100

Remarks: When using labels on liner, the printer advances each printed label to the cutting position (between two labels) according to the program before the liner is cut. Due to differences between batches of media, the printer may not cut exactly between labels, but either cut a slice at the last part of the printed label or a slice at the front part of next label.

Cutting through labels should be avoided because the adhesive may stick to the cutting parts and prevent them from operating properly.

If the cut occurs in the already printed label, increase the cut position index value.

If the cut occurs in the next label, decrease the cut index value.

Example:

To increase the cut position index value, enter the command below:

```
f110 ↵
```

FE - End Store Command

Purpose: Use this command to end a Form Store sequence.

Syntax: FE

Remarks: The Form Store sequence must start with the FS command and end with the FE command.

Example:

```
FS"formname" ↵
.........
FE ↵
```

FI - Print Form Information

Purpose: Use this commandto produce a list of all forms stored in printer's memory.

Syntax: FI

Remarks: The FI command is executed directly without appending a Linefeed.

Issue a FI command after storing a form to make sure the storing was successful and to check the amount of free form memory.

FK - Delete Form

Purpose: Use this command to delete a specified form or all forms from memory.

Syntax: FK“name”|“*”

FK Command Parameter Descriptions

Parameter	Description
“name”	The named form is deleted from memory.
“*”	If an asterisk (*) is entered as a wildcard instead of a name, all forms are deleted from memory.

Example 1:

To delete a form named FORM1, enter the command below:

```
FK“FORM1” ↵
```

Example 2:

To delete all forms, enter the command below:

```
FL“*” ↵
```

FR - Retrieve Form

Purpose: Use this command is to retrieve a form that was previously stored in memory.

Syntax: FR“name”

FR Command Parameter Descriptions

Parameter	Description
“name”	This is the form name used when the form was stored. The printer is case-sensitive.

Remarks: To print a list of forms currently stored in memory, use the FI command.

Example:

To retrieve the form named "Test1," enter the command below:

```
FR"Test1" ↵
```

FS - Form Store

Purpose: Use this command to begin a Form Store sequence.

Syntax: FS"name"

FS Command Parameter Descriptions

Parameter	Description
"name"	This is the form name used when retrieving the stored form. The name may be from 1-8 characters. The printer is case sensitive (the form names are stored with the exact case entered on the FS command line).

Remarks: All commands following FS are stored in the Forms memory until a FE command is received to end the form store process. If a form with the same name is already stored in memory, the FS command results in an error and the old form is retained. When updating a form, use the FK command to delete the old version before storing the new version. To print a list of the forms currently stored in memory, use the FI command.

Global commands, such as EI, EK, ES, FI, FK, GI, GK, GM, I, N, P, U, UE, UF, UG, UI, UM,UP, UN, US, Y, W, ?, or ^@ should not be used in a form store sequence.

Example:

This example begins the form store sequence of TEST1 and the ends it.

```
FS"TEST1" ↵
.....
FE ↵
```

Startup Form

A special case of forms is the startup form, that is automatically retrieved and prompted for variables (if necessary) each time power is applied to the printer. A startup form is created by naming the form "AUTOFR". To exit the "AUTOFR" mode, send XOFF or NULL to the printer on the serial interface.

Always test the form using another name before making it a startup form. If a startup form causes an error, there are two ways of clearing it:

- If the indicator lamp shines green, send XOFF or NULL to exit "AUTOFR" mode. Then delete the startup file using FK"AUTOFR".
- If the indicator lamp shines orange, there is no communication and the memory must be erased by pressing the **Feed** button for more than 3 seconds in Dump mode.

GG - Print Graphics

Purpose: Use this command to print a graphic that has been previously stored in memory.

Syntax: GGp_1,p_2,"name"

GG Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
"name"	This is the name used when the graphic was stored. The name may be from 1 to 8 characters. The printer is case sensitive, so the use of upper and lowercase letters must match the original name.

Remarks: A graphic can only be printed in the same direction and size as when it was saved. There are no means of magnification or rotation of an individual graphic. However, the entire print image including all text, bar codes, graphics, lines, and boxes can be rotated 180° using the Z command.

Example:

This example prints the graphic "LOGO," see command below:

```
GG50,50,"LOGO" ↵
```

GI - Print Graphics Information

Purpose: Use this command to print a list of all graphics stored in memory.

Syntax: GI

Remarks: The GI command is executed directly without appending a Linefeed.

Issue a GI command after having stored a graphic to make sure the storing was successful, and to check the amount of free graphic memory.

GK - Delete Graphics

Purpose: Use this command to delete a specified graphic or all graphics from memory.

Syntax: GK"name"|"*"

GK Command Parameter Descriptions

Parameter	Description
"name"	Only the named form is deleted from memory.
"*"	If an asterisk (*) is entered as a wildcard instead of a name, all forms are deleted from memory.

Example1:

```
To delete the graphic named "LOGO":
GK"LOGO" ↵
```

Example 2:

```
To delete all graphics:
GK"*" ↵
```

GM - Store Graphics In Memory

Purpose: Use this command to store .pcx graphic files in Flash memory.

Syntax: GM"name"p_1"DATA"

GM Command Parameter Descriptions

Parameter	Description
"name"	This is the name to use when retrieving the stored graphic (maximum of 8 characters). The printer is case sensitive; graphic names are stored with the exact case as entered on the GM command line.
p	This is the size of the original .pcx file in bytes. In DOS, the DIR command can be used to determine the exact file size.
"DATA"	The graphics data in 1-bit (black and white) PCX format. The resolution of the graphics must match resolution of the printer.

Remarks: The GM command saves the graphics in the Flash memory, so it is not lost at power off. Use it for graphics that are used frequently and do not change, such as the logo of your company. Compare with GW command. In a DOS system, the "DATA" portion can be sent to the printer via the parallel port using the DOS COPY command.

Example:

Assume you have a .pcx file named LOGO.pcx in your current directory. Use a text editor to create a text file called for example STOREIT.TXT and store it in the same directory as the .pcx file.

```
↵
GM"LOGO"1421 ↵
To store the image in the default printer, at the the
DOS prompt type:
COPY STOREIT.TXT PRN
COPY LOGO.PCX PRN .b
```

To store the image in the printer connected to port LPT1, at the DOS prompt type:

```
COPY STOREIT.TXT LPT1:
COPY LOGO.PCX LPT1: /b
```

The GI command can be used to verify that the graphic was successfully stored. If not, check that the .pcx file is in 1-bit (black and white) format and that the available graphics memory is large enough to accommodate the graphics.

The following sequences show how to generate the image "PYRAM" and print two copies. Image "PYRAM" is saved as a .pcx file (version 2) in monochrome mode with a size of 32*32 dots. Data below is shown in hex and ASCII format:

0000	0D 0A 47 4D 22 50 59 52 41 4D 22 32 39 34 0D 0A	..GM"PYRAM"294..	Save image
0010	0A 02 01 01 00 00 00 00 1F 00 1F 00 0E 00 0E 00	.....	PCX-header
0020	00 00 00 FF FF FF 00 00 1D 04 00 00 00 00 00 00	.....	
0030	38 42 13 00 EC E9 12 00 03 00 00 00 90 41 13 00	8B.....A..	
0040	FF FF FF FF 00 00 00 00 FF FF FF FF DC E9 12 00	.....	
0050	00 01 04 00 01 00 00 00 00 00 00 00 00 00 00 00	.....	
0060	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....	
0070	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....	
0080	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....	PCX-header
0090	C1 FF C1 00 00 C1 FF 80 C1 FF C1 FF 01 BF 80 01	.....	end
00A0	C1 FD A0 7F C1 FE 05 AF C1 C0 03 C1 F5 A8 3F C1	.....?.	PCX data
00B0	FC 15 AB C1 E0 07 C1 D5 AA 1F C1 F8 55 6A C1 F0	.....Uj..	
00C0	0F 56 5A 8F C1 F1 5A 56 B8 1D 6A 55 A7 C1 E5 AA	.VZ...ZV..jU....	
00D0	55 6C 36 AA 55 5B C1 DA AA 55 56 6A AA C1 55 55	Ul6.U[...UVj..UU	
00E0	C1 AA AA C1 55 55 C1 AA AA 55 56 6A AA 55 5B C1	....UU...UVj.U[.	
00F0	DA AA 55 6C 36 AA 55 A7 C1 E5 AA 56 B8 1D 6A 5A	..Ul6.U....V..jZ	
0100	8F C1 F1 5A 6A C1 F0 0F 56 AA 1F C1 F8 55 AB C1	...Zj...V....U..	
0110	E0 07 C1 D5 A8 3F C1 FC 15 AF C1 C0 03 C1 F5 A0	.....?..........	
0120	7F C1 FE 05 BF 80 01 C1 FD 80 C1 FF C1 FF 01 C1	.....	
0130	FF C1 00 00 C1 FF	.....	
			PCX data end

Now the image is stored on FLASH and can be used anywhere and several times on the printout, as this example below:

```
N ↵
GG0,0,"PYRAM" ↵
GG50,50,"PYRAM" ↵
P ↵
```

The result is the printout shown below:

GRP - Reply Graphics From Print Buffer

Purpose: Use this command to dump part of the printer buffer back to the host via the serial port.

Syntax: GRPp_1,p_2,p_3,p_4[,p_5]

GRP Command Parameter Descriptions

Parameter	Description
p_1	X-position in printer dots
p_2	Y-position in printer dots.
p_3	Number of bytes across the graphic (8 dots = 1 byte).
p_4	Number of dot rows going down the graphic.
p_5	Parameter setting the format of the data. Allowed values are: B = Binary, not inversed. b = Binary, inversed (default). H = Hexadecimal, not inversed. h = Hexadecimal, inversed.

Remarks: This command is the reverse of the GW command and can be used to verify that data has been rendered correctly. What part of the print buffer is sent back to the host is specified by the the parameters p_1-p_4 above, and the format of this data by p_5.

Note: There is no flow control or handshaking when sending this data to the host, so use this command only for small areas.

Example:

```
GRP20,10,4,32,h ↵
```

The command above replies in hexadecimal format like the example shown below.

```
00 FF FF 00 3F FF FF FE 5F FF FF FE 6F FF FF FE
77 FF FF FE 7B FF FF FE 7D FF FF FE 7E FF FF FE
FF 7F FF FF FF BF FF FF FF DF FF FF FF EF FF FF
FF F7 FF FF FF FB FF FF FF FD FF FF FF FE FF FF
FF FF 7F FF FF FF BF FF FF FF DF FF FF FF EF FF
FF FF F7 FF FF FF FB FF FF FF FD FF 7F FF FE FE
7F FF FF 7E 7F FF FF BE 7F FF FF DE 7F FF FF EE
7F FF FF F6 7F FF FF FA 7F FF FF FC 00 00 00 00
```

GW - Store Graphics In Image Buffer

Purpose: Use this command to store binary graphics files directly in the image buffer.

Syntax: GW p_1,p_2,p_3,p_4,"DATA"

GW Command Parameter Descriptions

Parameter	Description
p_1	X-position in printer dots
p_2	Y-position in printer dots.
p_3	Number of bytes across the graphic (8 dots = 1 byte).
p_4	Number of dot rows going down the graphic.
"DATA"	The graphic data in 1-bit (black and white) binary format. First data-byte represent dots in upper left corner and next data-byte next to the right. "1" bits are white dot-positions and "0"-bits are black dot-positions. The total amount of "DATA" bytes are p_3 * p_4.

Remarks: Use this command instead of GM for temporarily used graphics, for example images that change between each label. Not only is this method faster, but it also prolongs the life of the flash memory as the graphics are downloaded directly to SRAM.

The firmware calculates exactly how much data to expect based on p_3 and p_4.

Example:

The following sequence shows how to generate and print an image of a reduced square of 32*32 dots, with a diagonal line, all lines 1 dot wide. Data below is shown in hex format:

```
0000   4E 0D 0A 47 57 32 30 2C 31 30 2C 34 2C 33 32 2C  N..GW20,10,4,32,
0010   00 FF FF 00 3F FF FF FE 5F FF FF FE 6F FF FF FE  ....?..._...o...
0020   77 FF FF FE 7B FF FF FE 7D FF FF FE 7E FF FF FE  w...{...}...~...
0030   FF 7F FF FF FF BF FF FF FF DF FF FF FF EF FF FF  ................
0040   FF F7 FF FF FF FB FF FF FF FD FF FF FF FE FF FF  ................
0050   FF FF 7F FF FF FF BF FF FF FF DF FF FF FF EF FF  ................
0060   FF FF F7 FF FF FF FB FF FF FF FD FF 7F FF FE FE  ................
0070   7F FF FF 7E 7F FF FF BE 7F FF FF DE 7F FF FF EE  ...~............
0080   7F FF FF F6 7F FF FF FA 7F FF FF FC 00 00 00 00  ................
0090   50 0D 0A                                         P..
```

The result is a printout as shown below:

I - Character Selection

Purpose: Use this command to select the proper character set.

Syntax: Ip_1,p_2,p_3

I Command Parameter Descriptions

Parameter	Description
p_1	Number of data bits (7 or 8). Default is 8.
p_2	Printer code page (1 digit, see table on next page). Default is 0.
p_3	KDU country code (3 digits, see table on next page. Default is 001 (only if p_1 = 8).

Printer Code Page (p_2) for 7 Data Bits ($p_1 = 7$)

P_2	Language
0	English (US)
1	English (UK)
2	German
3	French
4	Danish
7	Swedish
8	Swiss

Printer Code Page (p_2) for 8 Data Bits ($p_1 = 8$)

P_2	Code Page	Language
0	DOS 417	English (UK)
1	DOS 850	Multilingual (Latin 1)
2	DOS 852	Latin 2 (Cyrillic II/Slavic)
3	DOS 860	Portuguese
4	DOS 863	Canadian (French)
5	DOS 865	Norwegian
6	DOS 857	Turkish
7	DOS 861	Icelandic
8	DOS 862	Hebrew
9	DOS 855	Cyrillic
10	DOS 866	Cyrillic CIS 1
11	DOS 737	Greek
12	DOS 851	Greek 1
13	DOS 869	Greek 2
A	Windows 1252	Latin 1
B	Windows 1250	Latin 2
C	Windows 1251	Cyrillic
D	Windows 1253	Greek
E	Windows 1254	Turkish

Printer Code Page (p_2) for 8 Data Bits (p_1 = 8) (continued)

P_2	Code Page	Language
F	Windows 1255	Hebrew

Note: If the code pages DOS 437, DOS863, or DOS 865 cannot produce the desired characters, use code page DOS 850 Multilingual.

KDU Country Code (p_3)

Code	Country
001	U.S.A
002	Canada
003	Latin America
027	South Africa
031	Netherlands
032	Belgium
033	France
034	Spain
039	Italy
041	Switzerland
044	United Kingdom
045	Denmark
046	Sweden
047	Norway
049	Germany
351	Portugal
358	Finland

For additional code page examples, refer to **"Code Pages" on page 135**.

Example:

To select an 8 bit character set for use in Sweden with a Keyboard display unit, see the command `I8,1,0486 8`.

i - Asian Character Spacing

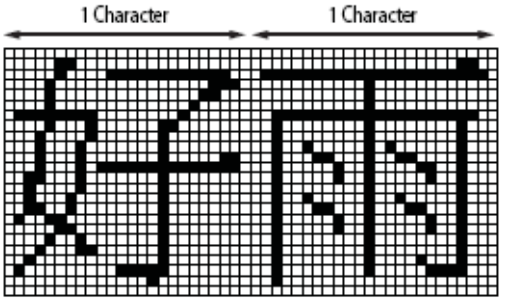
Purpose: Use this command to place an adjustable inter-character space between Asian font characters. The inter-character spacing gets multiplied with the text string by the horizontal and vertical multiplier values of the selected font. For help, see **"A - Printing Text" on page 34**.

Syntax: ip_1

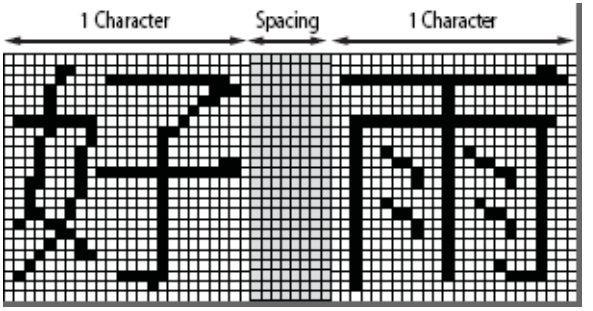
Example:

To select 8 dot spacing between Asian characters, use the command below:

`i8` ↵



iCommand: *Parameter p_1 set to 0 (default)*



iCommand: *Parameter p_1 set to 8 (dots)*

JB - Disable Top of Form Backup

Purpose: Use this command to disable automatic top of form backup of the media.

Syntax: JB

Remarks: By default, top of form backup feeds out an extra amount of media after printing so that the label can be torn or peeled off properly and then retracts the media so that printing can start at the top of the label.

Top of form backup cannot be used if the printer has the optional cutter installed. To disable top of form backup, send an O command followed by a JB command.

The JB command disables top of form backup. The printer stops feeding media when the end of the label aligns with the printhead dot line. Any j command is ignored, although it is stored in memory and can be enabled again using a JF command.

JF - Enable Top of Form Backup

Purpose: Use this command to enable automatic top of form backup of the media.

Syntax: JF

Remarks: Top of form backup is used in connection with the j command. The printer feeds out enough extra media after printing a label so that it can be torn, peeled, or cut off properly.

By default, top of form is enabled so that is the media is retracted far enough to begin printing at the top of the next label.

Top of form backup can be disabled by a JB command. Any j command is ignored and the printer stops feeding when the end of the label becomes aligned with the printhead dot line.

If the optional cutter is installed on the printer, the JB command must be preceded by an O command. However, the j command is kept stored in memory and can be enabled again using a JF command.

Activating the cutter using an OC command has the same effect as issuing a JF command.

j - Media Feed Adjustment

Purpose: This command makes it possible to set the media feed for tear-off (straight-through), peel-off (self-strip), or cut-off operation.

Syntax: jp_1

j Command Parameter Descriptions

Parameter	Description
p_1	Length of media feed after printing in dots (0-160). Recommended values at 203.2 dpi (8 dots/mm): Tear-off (straight-through) operation: 136 (default) Peel-off (self-strip) operation: 110 Recommended values at 300 dpi (11.81 dots/mm): Tear-off (straight-through) operation: 204 (default) Peel-off (self-strip) operation: 165

Remarks: When using peel-off operation, the labels should remain slightly stuck to the liner (backing paper) so they do not fall off but can still can be easily removed.

In tear-off operation, the j command adjusts the media feed so that the perforation between tags or gap between labels is aligned with the tear bar.

Do not use extremely small or large values for the j command as such values may cause the printer to feed or pull back the media continuously.

The extra media feed set by the j command can be enabled or disabled using JF and JB "Top of Form Backup" commands. By default, "Top of Form Backup" is enabled.

Example 1:

This example shows the adjustment for peel-off operation at 8 dots/mm.

```
j110 ↵
```

Example 2:

This example shows the adjustment for peel-off operation at 8 dots/mm.

```
j136 ↵
```

LE - Line Draw Exclusive

Purpose: Use this command to draw black lines where the line needs to be white when intersecting a black area or object or black when intersecting a white object or area.

Syntax: LEp_1,p_2,p_3,p_4

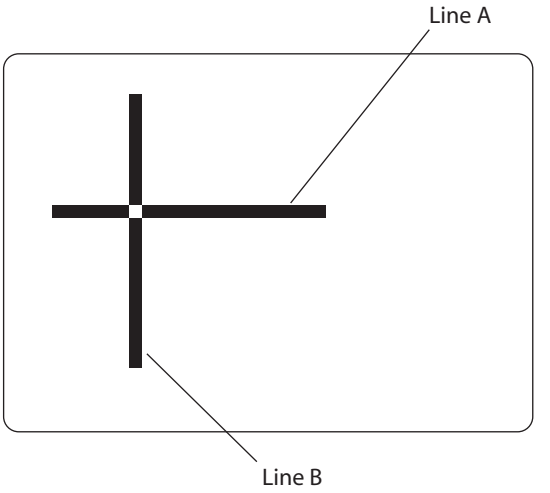
LF Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
p_3	Horizontal length in dots
p_4	Vertical length in dots

Example:

This example draws two lines (A and B) intersecting one another.

```
N ↵
LE50,200,400,20 ↵
LE200,50,20,400 ↵
P1 ↵
```



Line Draw Exclusive Example

LO - Line Draw Black

Purpose: Use this command to draw black lines to overwrite previous information.

Syntax: LOp_1,p_2,p_3,p_4

LO Command Parameter Descriptions

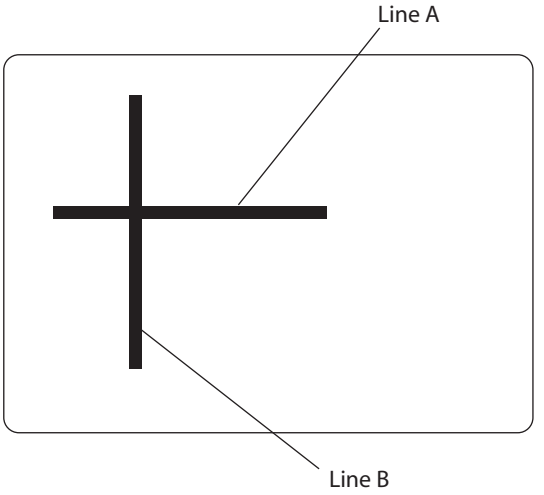
Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
p_3	Horizontal length in dots
p_4	Vertical length in dots

Example:

This example draws two lines (A and B) intersecting one another, using the commands below:

```
N ↵
LE50,200,400,20 ↵
LE200,50,20,400 ↵
```

```
P1 ↵
```



Line Draw Black Example

LS - Line Draw Diagonal

Purpose: Use this command to draw diagonal black lines to overwrite previous information.

Syntax: LSp_1,p_2,p_3,p_4,p_5

LS Command Parameter Descriptions

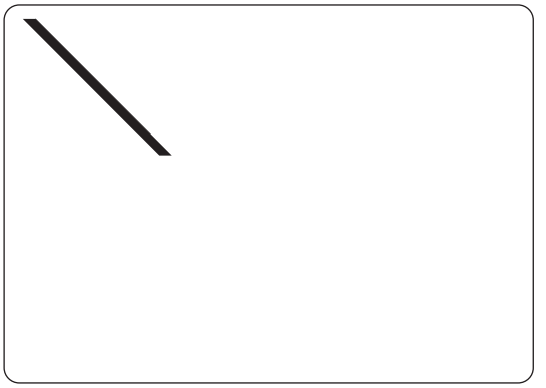
Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
p_3	Line thickness in dots.
p_4	Horizontal end position (X) in dots.
p_5	Vertical end position (Y) in dots.

Example:

This example draws a diagonal line.

```
N ↵
LS10,10,20,200,200 ↵
```

```
P1 ↵
```



Line Draw Diagonal Example

LW - Line Draw White

Purpose: Use this command to draw white lines, effectively erasing previous information.

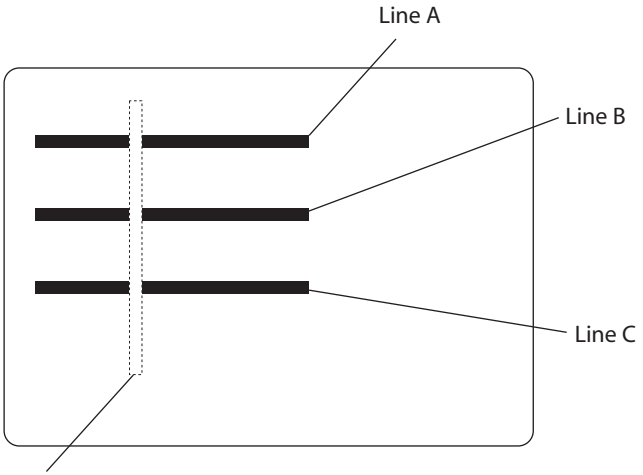
Syntax: LWp_1,p_2,p_3,p_4

LW Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
p_3	Horizontal length in dots.
p_4	Vertical length in dots.

Example: This example draws one white line (D) intersecting three black lines (A-C), see commands below:

```
N ↵
LO50,100,400,20 ↵
LO50,200,400,20 ↵
LO50,300,400,20 ↵
LW200,50,20,400 ↵
P1 ↵
```



Line Draw White Example

Memory - Memory Allocation

Purpose: Use this command to select the memory allocation used by the printer for data storage.

Note: This command only works with the PF8t or a printer that has ESim version 7.00 or greater with a CF card option installed.

Syntax: Mp_1

Memory Command Parameter Descriptions

Parameter	Description
p_1	Memory select value: 0 = Select printer memory (default). 1 = Select the CF card memory. F = Format the CF card.

Example:

MO ↵

```
UM ↵
UM150000,2048,0,0,0,0,0,0,UI80,001 ↵
Now, insert a 256 MB CF card into the printer and
type:
UM150,249912,0,0,0,0,0,0,0,UI80,001 ↵
```

N - Clear Image Buffer

Purpose: Use this command to clear the image buffer before building a new image. It also clears any error list that has not been presented.

Syntax: N

Remarks: The N command is essential when printing labels in Direct mode. It is not necessary to use the N command before printing a form. The N command must not be used inside a form in the Form Edit mode.

O - Option Select

Purpose: Use this command to enable or disable various sensors and the cutter.

Syntax: O[Sp,N[,D[,Cnnn|Cb]]]

O Command Parameter Descriptions

Parameter	Description
S	Enable reverse gap sensing.
N	Disable label taken sensor.

O Command Parameter Descriptions (continued)

Parameter	Description
D	Disable ribbon end sensor.
C*nnn*	Print nnn labels (1-255) before cutting.
Cb	Print batch before cutting

Remarks: Parameters can be entered in any order. Default is on.

S - Reverse Gap Sensing Enabled

By default, the sensor interprets blockage of light to mean a label is present. This parameter reverses the operation of the label gap sensor so it interprets a blockage of light as a gap between labels. Before using the S parameter, make sure to load the printer with the appropriate type of media.

N - Label Taken Sensor Disable

When the label taken sensor is enabled, the communication to the printer is blocked as long as the sensor detects a label in the feed out slot. This command does not work with a cutter; if a cutter kit is fitted on the printer, use ON to disable the sensor.

D - Ribbon End Sensor Disable

The ribbon end sensor (thermal transfer models only) detects reflections from the trailing silvery part of the transfer ribbon.

Direct Thermal Mode

If the ribbon end sensor is disabled parameter, density settings are interpreted via a table that gives an optimized printout for direct thermal printing. For help with density settings, see **"D - Density" on page 63**.

Thermal Transfer Mode

If the ribbon end sensor is enabled, an error occurs if no reflection is detected. The density settings are interpreted via a table that gives an optimized printout for thermal transfer printing. For help with density settings, see **"D - Density" on page 63**.

C - Cutter Enabled

If option C is enabled, cutting is performed after print. Commands JF and JB are disabled but their values remain stored in memory.

If option C is disabled, no cutting is performed after printing. Commands JF and JB are enabled. The f command is disabled but its value remains stored in memory.

Combinations of Various O Command Parameters

Command	LTS (N)	DT/TTR Mode (D)	Reverse Gap (S)	Cutter (C)
O	Enable	TT mode	Disable	Disable
OD	Enable	DT mode	Disable	Disable
OS	Enable	TT mode	Enable	Disable
OD,S	Enable	DT mode	Enable	Disable
OS,Cnnn|b	Disable	TT mode	Enable	Enable
OD,S,Cnnn|b	Disable	DT mode	Enable	Enable
ON	Disable	TT mode	Disable	Disable
ON,D	Disable	DT mode	Disable	Disable
ON,D,S	Disable	DT mode	Enable	Disable
ON,Cnnn|b	Disable	TT mode	Disable	Enable
OCnnn|b	Not used	TT mode	Disable	Enable
OD,Cnnn|b	Disabled	DT mode	Disable	Enable

Example:

This example shows you how to enable DT mode, disable LTS, reverse gap sensor, and the cutter. See the command below:

```
ON,D ↵
```

oR - Character Substitution

Purpose: This command allows the advanced programmer to substitute the Euro currency character (€) for any ASCII character in printer-resident fonts 1-5. The original character can be restored by sending the oR command.

Syntax: `oR[p1[,p2]]`

oR Command Parameter Descriptions

Parameter	Description
p_1	If p_1 = E, the Euro character is mapped to the code page position specified by p_2. If no p_1 or p_2 parameters are give, all code pages are reset to the original default character mapping.
p_2	Specifies the code page position for the Euro character in the range ASCII 32-255 decimal for all code pages, provided p_1 = E. If p_2 is omitted, the Euro character is mapped to the code page position ASCII 213 decimal for all code pages provided that p_1 = E.

Remarks: The oR command is a global printer command and:

- cannot be issued inside a form.
- must be issued prior to issuing a text command and printing it.
- affects a single character on all code pages. Changing the character position restores the original character.
- flash memory printer parameter data is preserved until changed by the oR command, or the printer is reset to default.

Example:

```
oRE ↵
oRE,128 ↵
oR ↵
```

P - Print

Purpose: Use this command to print the contents of the image buffer.

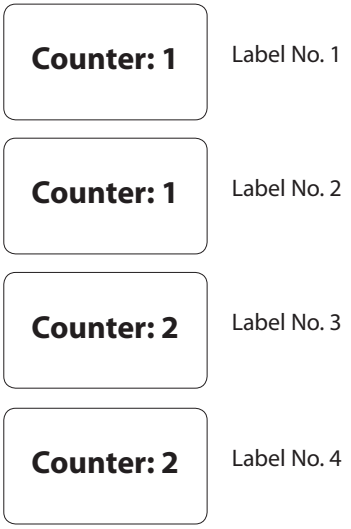
Syntax: Pp1[,p2]

Remarks: You cannot use the P command inside a stored form sequence. For automatic printing of stored forms, use the PA command.

Example: This example prints two label sets of one label each, see the command below:

```
P2,1 ↵
```

The principles for how counters are printed by this example, where the print command is `P2,2`.



Print Counters Example

PA - Print Automatic

Purpose: Use this command in a stored form sequence to automatically print the form as soon as all variable data has been supplied.

Syntax: PAp_1[,p_2]

PA Command Parameter Descriptions

Parameter	Description
p_1	Number of label sets (1-65535).
p_2	Number of copies of each label (1-64435) that is used in combination with counters to print multiple copies of the same label.

Remarks: Refer to the P command for explanations on how to print multiple labels with counters. The PA command follows the same principles.

The PA command can only be used with forms containing at least one variable (see V command). If there is no variable in the form, the printer enters an endless loop and prints continuously.

Example:

```
FK"TEST6" ↵
FS"TEST6" ↵
V00,59,N,"Enter text" ↵
A24,24,0,4,1,1,N,V00 ↵
PA1 ↵
FE ↵
FR"TEST6" ↵
? ↵
This is variable text
```

PF - Feed Media

Purpose: Use this command to feed the media forward or backward a given length.

Syntax: PFp_1[,p_2[,p_3]]

PF Command Parameter Descriptions

Parameter	Description
p_1	Number of steps to feed the media. Positive values feed the media forward, negative values backward. Range is -999 to 9999.
p_2	Position control after feeding. Allowed values: 0 = The media has unknown position. Printer needs label gap/black mark detecting before next print job (default). 1 = Media is located in the printing position. 2 = Media feed stops when Black mark/label gap is in sensor position or, if no black mark/gap is detected, when p_1 dots are stepped (error 99 is reported).
p_3	Option delay after feeding. Delay is p_3*100 ms.

Remarks: Media feeding is disrupted by pressing the **Feed** button or by opening the cover.

Example 1:

The following command feeds the media forward 360 steps, make the printer detect a gap/black mark before the next print job, and cause a delay of 3 seconds after the feed. The red LED blinks during the delay.

```
PF360,0,30 ↵
```

Example 2:

The following command retracts the media 360 steps and assume that the media is in printing position.

```
PF-360,1 ↵
```

Q - Set Form Length (Gap or Slot)

Purpose: Use this command to set the form and gap length when using the label gap sensor, or the amount of media feed after the print image in case of continuous stock.

Syntax: `Qp1,p2[±p3]`

Q Command Parameter Descriptions

Parameter	Description
p_1	Form length measured in dots. **203.2 dpi (8 dots/mm):** Default is 1200 dots. Maximum without memory cartridge is 3780 dots at full print width. Maximum with 256k SRAM cartridge is 6258 dots at full print width. **300 dpi (11.81 dots/mm):** Default is 1200 dots. Maximum without memory cartridge is 2640 dots at full print width. Maximum with 256k SRAM cartridge is 4364 dots at full print width.
p_2	Gap length measured in dots. 203.2 dpi (8 dots/mm) at 24 dots is the default. 300 dpi (11.81 dots/mm) at 24 dots is the default.
$\pm p_3$	Optional offset length measured in dots.

Remarks: The printers have a label gap sensor designed to detect the top of each form:

- through the semi-transparent liner in the gap between labels.
- through a hole in the media.

The sensor is located slightly to the right in relation to the center of the media path (as seen from the front of the printer). Refer to your printer user's manual for specifications of the size and location of detection slots.

When entering Dump mode, or when printing a form for the first time after power-up using the Windows Driver, the printer automatically determines the Q value while feeding a couple of labels. The current Q value is printed on the test label and the label produced by a U command. For more information on Dump Mode, see **"Dump Mode" on page 11**.

Continuous Stock

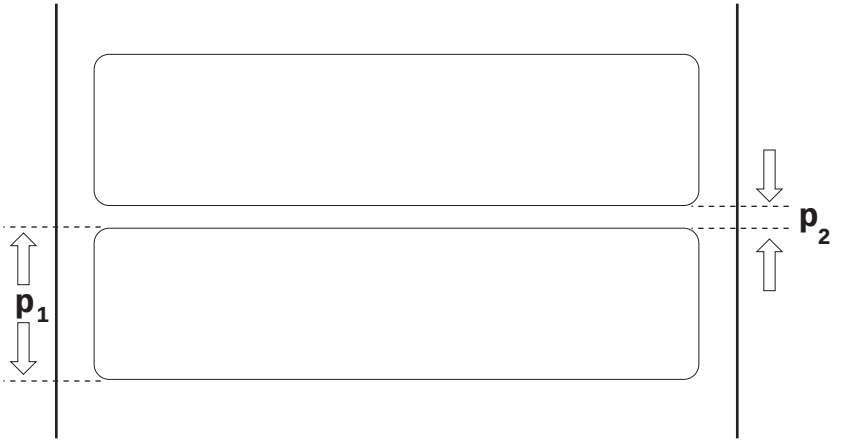
In case of continuous stock, parameter p_1 decides the amount of media feed performed after the actual print image has been printed. Continuous stock is selected by setting parameter $p_2 = 0$.

Be careful not having the printer loaded with continuous stock when entering Dump mode or an error occurs.

Example 1:

Rectangular label (203.2 dpi = 8 dots/mm printhead):

```
p1 = 20.0 mm (160 dots)
p2 = 3.0 mm (24 dots)
```



Example 1: *Rectangular Label*

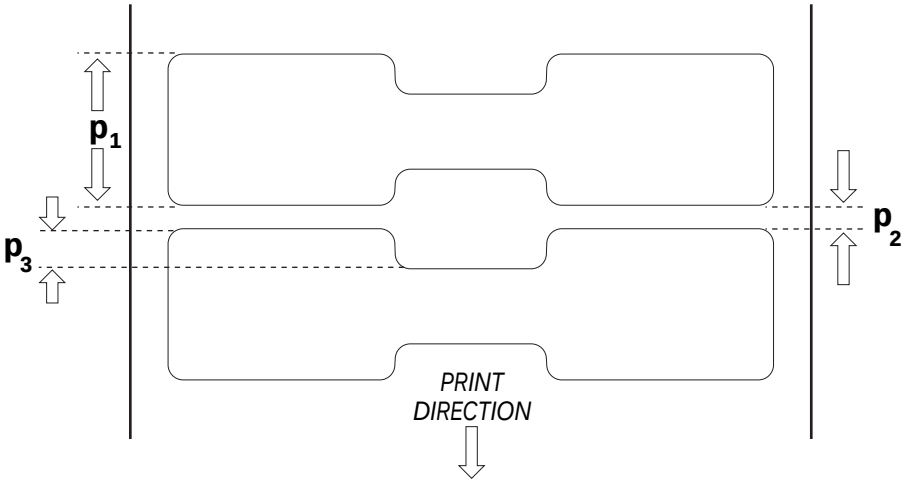
The Q command would be:

```
Q160,24 ↵
```

Example 2:

Butterfly label (293.2 dpi = 8 dots/mm printhead):

p_1 = 12.5 mm (100 dots)
p_2 = 3.0 mm (24 dots)
p_3 = 3.0 mm (24 dots)



Example 2: *Butterfly Label*

The Q command would be:

Q100,24+24 ↵

Q - Set Form Length (Black Mark)

Purpose: Use this command to switch from label gap sensor to the black mark sensor, and to specify the location and height of the black marks on the back of the media.

Syntax: $Qp_1,Bp_2[\pm p_3]$

Q Command Parameter Descriptions

Parameter	Description
p_1	Distance between black marks measured in dots.
B	Disables label gap sensor and enables the black mark sensor.
p_2	Height of black mark measured in dots.
$\pm p_3$	Optional offset length measured in dots.

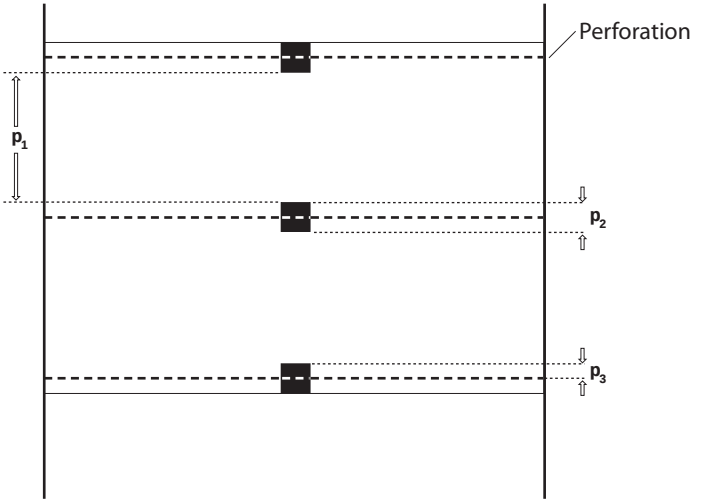
Remarks: In addition to the label gap sensor, the printers have a black mark sensor that determines the top of each form by sensing a preprinted black mark on the back of the media. The sensor is located slightly to the right of the center of the media path (as seen from the front of the printer).

Refer to your printer user's manual for specifications of the size and location of black marks.

Example 1:

On this tag, the black marks are printed on the perforation in a 203.2 dpi (8 dots/mm) printer:

p_1 = 31 mm (248 dots)
p_2 = 7.0 mm (56 dots)
p_3 = 0.5 mm (4 dots)



Example 1: *Printing on Perforations*

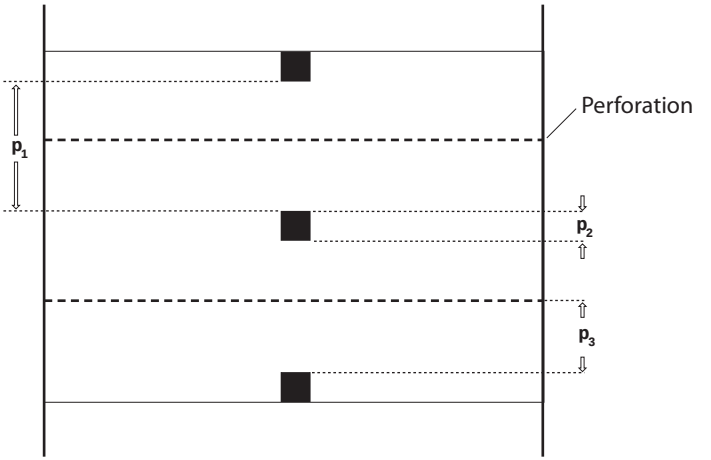
The Q command would be:

```
Q248,B56+4 ↵
```

Example 2:

On the tag below, the black marks are printed between the perforations. The printer has a 203.2 dpi (8 dots/mm) printhead.

p_1 = 31 mm (248 dots)
p_2 = 7.0 mm (56 dots)
p_3 = 17 mm (136 dots)



***Example 2**: Printing in Between Perforations*

The Q command would be:

`Q248,B56-136` ↵

q - Set Label Width

Purpose: Use this command to set the label width when using less than full width labels.

Syntax: qp_1

q Command Parameter Descriptions

Parameter	Description
p_1	Width of label measured in dots. Default: 832 at 203.dpi (8 dots/mm) 1208 at 300 dpi (11.81 dots/mm)

Remarks: The q command causes the image buffer to be formatted to match the label width, that is width is traded off for increased length within the same memory size.

The q command also automatically sets the margins according to the following rule:

```
(Number of dots on printhead - label width in
dots) / 2 (center-aligned)
```

Note: If an R command (reference point) is sent after a q command, the image buffer is automatically reformatted to match the width of the printhead and the margins are reset accordingly.

Note: At 300 dpi, a maximum label of 1248 dots can be set. However, the print image is not aligned at the center, and the data in the outer margins (beyond q1232) is lost.

Example:

This example sets the label width to 416 dots.

```
q416 ↵
```

R - Set Reference Point

Purpose: Use this command to move the reference point for the X and Y axis. All horizontal and vertical measurements in other commands use the setting for R as the origin for measurements.

Syntax: Rp_1,p_2

R Command Parameter Descriptions

Parameter	Description
p_1	Horizontal (left) margin measured in dots. Default is 000.
p_2	Vertical (top) margin measured in dots. Default is 000.

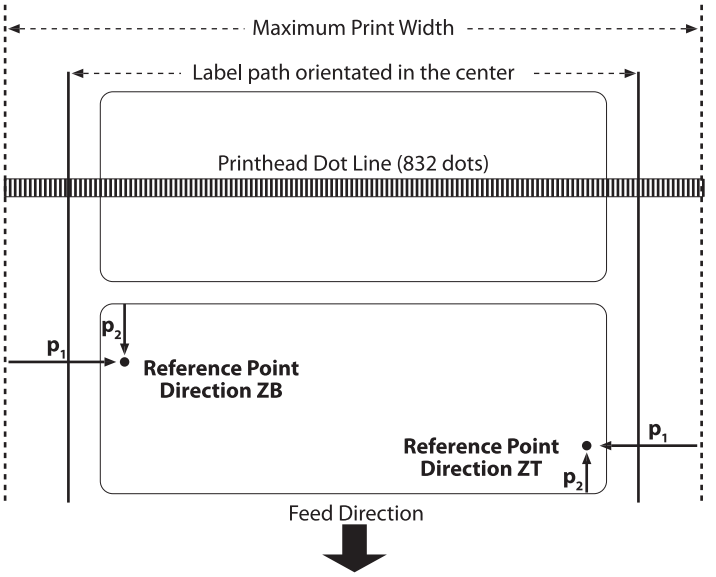
Remarks: The reference point command is used to establish top and left margins to prevent printing off the edge of the label. A minimum margin of 1 mm should be used on all sides of the label.

Caution

Repeated printing outside the edge of the media can cause excessive printhead wear.

For narrow labels, the R command could be substituted by q and r commands, which have the benefit of making better use of a limited image buffer. Any R command after a q command resets the width to the maximum print width, as a q832 command. The values for the latest R command (or r, whichever was last executed) are printed on the test label.

The print direction commands ZB, and ZT affect the location of the reference point, as illustrated below.



Reference Point Example

Example:

This example shows creates a 50 dot left margin on a label, see command below:

```
R50,100 ↵
```

r - Set Relative Reference Point

Purpose: Use this command to move the reference point for the x-axis and y-axis relative to the label width set by a previous q command.

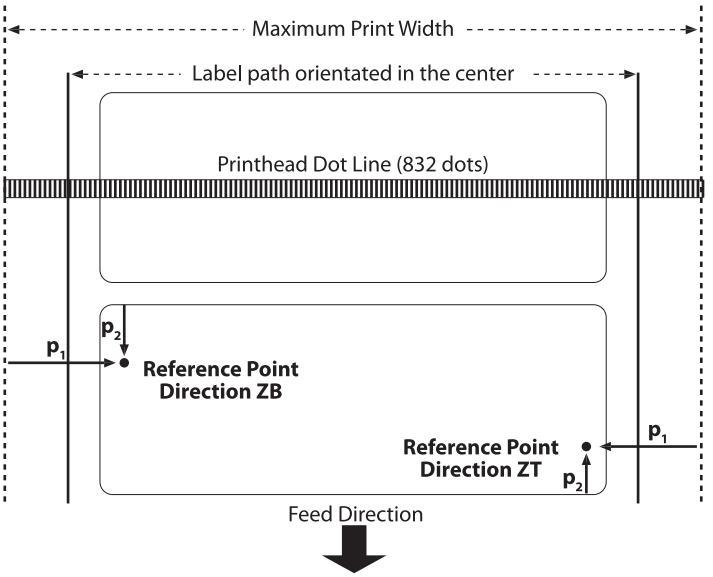
Syntax: rp_1,p_2

r Command Parameter Descriptions

Parameter	Description
p_1	Horizontal (left) margin measured in dots. Default is 000.
p_2	Vertical (top) margin measured in dots. Default is 000.

Remarks: The relative reference point command is used to establish the top and left margins relative to the label width. For narrow labels, the r command can be used after a q command, which has the benefit of making better use of a limited image buffer. The values for the latest r command (or R, whichever was last executed) are printed on the test label.

The print direction commands ZB and ZT affect the location of the relative reference point as illustrated.



Relative Reference Point Example

Example:

This example creates a 50 dot left margin and a 100 dot top margin from the label edge set by q command.

```
r50,100 ↵
```

S - Speed Select

Purpose: Use this command to select the print speed.

Syntax: Sp_1

S Command Parameter Descriptions

Parameter	Description	Notes
p_1	Speed select value:	
	0 = 30 mm/sec (1.2 in/sec).	Available for 300 dpi (11.81 dots/mm) printheads only.
	1 = 40 mm/sec (1.6 in/sec).	Available for 300 dpi (11.81 dots/mm) printheads only.

S Command Parameter Descriptions (continued)

Parameter	Description	Notes
	2 = 50 mm/sec (2 in/sec).	Available for both 203.2 dpi and 300 dpi printheads.
	3 = 75 mm/sec (3 in/sec).	Available for 203.2 dpi (8 dots/mm) printheads only.
	4 = 100 mm/sec (4 in/sec).	Available for 203.2 dpi (8 dots/mm) printheads only.

Remarks: Changing the print speed can affect the blackness of the printout, which may have to be adjusted using a D command. The density settings has priority over speed selection, which might cause the speed to be reduced at high density settings.

Example:

This example shows how to set the print speed to 500 mm/sec (2 in/sec).

```
S2 ↵
```

SA - Setup Adjust

Purpose: Use this command is to control the activation and storage of setup commands and values.

Syntax: SAp_1

SA Command Parameter Descriptions

Parameter	Description
p_1	Setup adjust value: 0 = All commands remain active and values are saved when changed. The printer uses stored setup values (default). 1 = All setup parameters are locked and commands are ignored. The printer uses only previously stored setup values. 2 = All setup commands within forms are ignored.

Remarks: The SA command affects the following setup commands: R, r, D, j, J, q, Q, S, Z, and SPC. The current SA value is stored in Flash memory and printed on the test label.

Example:

This example shows how to ignore all setup commands within a form.

SA2 ↵

SPC - Setup Print Copy

Purpose: Use this command is to change the function of the **Feed** button to print a copy of the label currently residing in the image buffer.

Syntax: SPCp_1

SPC Command Parameter Descriptions

Parameter	Description
p_1	Setup Print Copy value: 0 = Media feeds as usual when the **Feed** buttonis pressed (default). 1 = Print Copy is activated, but is disabled if the A, b, B, GW, GG, LE, LO, LS, LW, N, q, Q, r, R, X, and Info commands have been sent since the last printout. 2 - Print Copy is activated. In this state, additional fields can be added to the existing image and printed by pressing the **Feed** button.

Remarks: The following commands disable Print Copy when SPC1 is set: A, b, B, GW, GG, LE, LO, LS, LW, N, q, Q, r, R, X, and Info. The current SPC value is stored in Flash memory and printed on the test label.

Example:

This example shows how to activate Print Copy, see command below:

SPC1 ↵

TD - Define Date Format

Purpose: Use this command to define the date format when printing.

Syntax: TDp_1[/p_2/p_3]

TD Command Parameter Descriptions

Parameter	Description
P_1 - P_3	The parameters describe the format of the date display. At least one parameter must be supplied. Each parameter can be any of the acceptable values listed below: y2 = Year displayed as 2 digits. y4 = Year displayed as 4 digits. me = Month displayed as a 3 letter English abbreviation. mn = Month displayed as 2 digits. dd = Day displayed as 2 digits. / = An optional separator character, which can be any character in the range between ASCII 32 dec. and ASCII 63 dec. The separator is printed between the results of each of the supplied parameters. Default is me/dd/y4.

Remarks: This command works only if the printer is fitted with an optional real-time clock circuit (RTC).

Example 1:

If the current date is January 15, 2004:

`TDy2/me/dd` ↵

The printer prints 04/JAN15.

Example 2:

If the current date is January 15, 2004:

`TDdd-me-y4` ↵

The printer prints 15-JAN-2004.

Example 3:

If the current date is January 15, 2004:

`TDme/dd/y4` ↵

The printer prints JAN/15/2004.

TS- Set Real-Time Clock

Purpose: Use this command to set the time and date in the optional real-time clock circuit.

Syntax: TSp_1,p_2,p_3,p_4,p_5,p_6

TS Command Parameter Descriptions

Parameter	Description
p_1	Months are entered as 0-12.
p_2	Days are entered as 01-31.
p_3	Years are entered as the last two digits. For example 2004 is entered as 04.
p_4	Hours entered in 24 hour format (00-23).
p_5	Minutes are entered as 00-59.
p_6	Seconds are entered as 00-59.

Remarks: This command works only if the printer is fitted with an optional real-time clock circuit (RTC).

Example:

This example sets the date to JAN 15,2004 and the time to 12:45:23 p.m.

```
TS01,15,04,12,45,23 ↵
```

U- Print Configuration (General)

Purpose: Use this command to print the current printer configuration on a label without having to enter Dump mode.

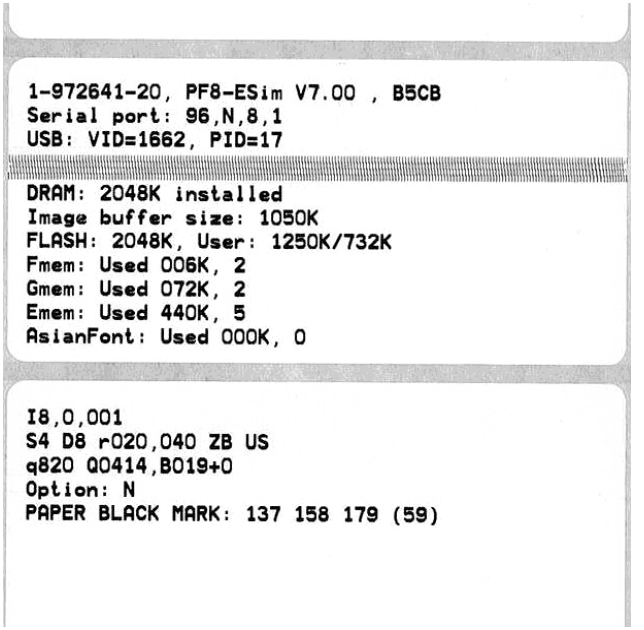
Syntax: U

Example:

This example shows a typical label printed when using the U command with the following setup:

- Memory cartridge loaded
- Media with black marks
- Two forms, two graphics, and five soft fonts loaded

- Short labels



PF8 Printer Configuration Label Example

UC - Command Reply Accept Character Control

Purpose: Use this command to specify a prompt to acknowledge characters which the printer returns on the RS-232 or USB channel to the host after each command execution with no error reply before proceeding with the next command.

Syntax: UCp_1

UC Command Parameter Descriptions

Parameter	Description
p_1	Specifies the desired reply character by its ASCII decimal value (0-255). If p_1 is anything other than numerical characters or the value is 0, there is no Command Reply Accept character (default).

Remarks: Default is no Command Reply Accept Character (command UC0).

Parameter p_1 saves in Flash.

If command UC is activated, it replaces the <ACK> character at the end of command US and P.

If an error occurs and error report is activated, the error message is sent instead.↵

Example:

The table below shows an example of the UC command with the a reply.

Command	Reply	Explanation
UC062 8	>	Set Command Reply Accept character to ">".
US 8	>	Reply error.
X50,200,5,400,20 8	>	Draw a box.
P 8	>	Print box and reply ">" at ready.

UDC - Memory Cartridge Information (PC4 only)

Purpose: Use this command to check an inserted memory cartridge and to return information on the cartridge's contents on the RS-232 or USB channel.

Syntax: UDC

Remarks: This command checks the memory cartridge for the following information and returns one of the following alternatives listed in the table below.

Memory Cartridge Commands and Explanations

Command	Explanation
NA 8	Cartridge not detected.
000 8	Cartridge detected, but no relevant information is found.

Memory Cartridge Commands and Explanations (continued)

Command	Explanation
001-004 8	Cartridge detected. Followed by one to four lines of information on detected firmware, and/or Asian fonts.

Example:

The example below shows a UDC command and a sample response.

```
UDC ↵
004 ↵
1-972698-02,Cardfirm 02 ↵
1-972601-01,Base 4.01 ↵
1-972699-01,Bootfirm 01 ↵
1-972697-33,Intfont 01 ↵
```

UE - Soft Font Information Inquiry

Purpose: Use this command to make the printer send information back to the host on the soft fonts stored in memory.

Syntax: UE

Remarks: The printer sends the number of soft fonts and the name, height, and direction of each soft font through the RS-232 or USB port.

The UE command is executed directly without appending a Linefeed.

Example:

```
UE ↵
```

UF - Form Information Inquiry

Purpose: Use this command send information about forms currently stored in the printer back to the host.

Syntax: UF

Remarks: The printer sends the number of forms stored and the name of each form to the host through the RS-232 or USB port.

The UF command is executed directly without appending a Linefeed.

UG - Graphics Information Inquiry

Purpose: Use this command to send information about graphics currently stored in the printer back to the host.

Syntax: UG

Remarks: The printer sends the number of forms stored and the name of each form to the host through the RS-232 or USB port.

The UG command is executed directly without appending a Linefeed.

UI - Enable Prompts/Code Page Inquiry

Purpose: Use this command to enable prompts to be sent to the host and to send the currently selected code page to the host through the RS-232 or USB port.

Syntax: UI

The printer sends information on the currently selected code page back to the host in the following formats:

UIp_1,p_2,p_3

UI Command Parameter Descriptions

Parameter	Description
p_1	Number of data bits.
p_2	Code page.
p_3	Country code.

Remarks: The keyboard display unit automatically sends this command each time power is applied. The UI command is disabled by removing power from the printer for 60 seconds.

Also see **"I - Character Selection" on page 84** and **"U- Print Configuration (General)" on page 115**.

Example:

This example enables prompts from the host and returns the current code page.

UI ↵

```
UI80,001
```

UM - Code Page and Memory

Use this command to send the currently selected code page and memory status to the host through the RS-232 or USB port.

Syntax: `UM`

The printer sends information on the currently selected code page and memory status back to the host in the following formats:

$UMp_1,p_2,p_3,p_4,p_5,p_6p,_7\ UIp_8,p_9,p_{10}[,p_{11}]$

UM Command Parameter Descriptions

Parameter	Description
p_1	Image buffer size in kilobytes.
p_2	Total user Flash memory size for [Form + Graphic + External font + Asian font] in kilobytes including decimals.
p_3	Form memory used in kilobytes. Decimals = Forms file counter.
p_4	Graphic memory allocation size in kilobytes.
p_5	Graphic file counter.
p_6	External font memory allocation size in kilobytes.
p_7	External font file counter.
p_8	Number of data bits.
p_9	Code page.
p_{10}	Country code.
p_{11}	Asian font file flag and used memory in kilobytes, where *nnn* = memory used in kilobytes for Asian font. A*nnn*= Chinese traditional B*nnn* = Chinese simplified C*nnn* = Japanese D*nnn* = Korean

Remarks: Also see **"I - Character Selection" on page 84**, **"U- Print Configuration (General)" on page 115**, **"UI - Enable Prompts/ Code Page Inquiry" on page 119**, and **"UP - Code Page and Memory Inquiry Print" on page 121**.

Example:

```
This example returns the current code page:
UM ↵
UM1050,998.0,8.3,40,1,37,2 UI80,001,B581
```

UN - Disable Error Reporting

Purpose: Use this command to disable error reporting.

Syntax: UN

Remarks: Cancels US command.

UP - Code Page and Memory Inquiry Print

Purpose: Use this command to print and send the currently selected code page, and memory status to the host through the RS-232 or USB port.

Syntax: UP

The printer:

- sends information on the currently selected code page and memory status back to the host (same as UM command).
- prints the current printer configuration.

The format of the data sent to the host in the following formats:

$UMp_1,p_2,p_3,p_4,p_5,p_6,p_7\ UIp_8,p_9,p_{10}$

UP Command Parameter Descriptions

Parameter	Description
p_1	Image buffer size in kilobytes.
p_2	Form memory allocation size in kilobytes.
p_3	Form memory free in kilobytes.
p_4	Graphic memory allocation size in kilobytes.
p_5	Graphic memory free in kilobytes

UP Command Parameter Descriptions (continued)

Parameter	Description
p_6	External font memory allocation size in kilobytes.
p_7	External font memory free in kilobytes.
p_8	Number of data bits.
p_9	Code page.
p_{10}	Country code.

Remarks: Also see **"I - Character Selection" on page 84**, **"U- Print Configuration (General)" on page 115**, and **"UI - Enable Prompts/Code Page Inquiry" on page 119**.

US - Enable Error Reporting

Purpose: Use this command to enable the status reporting feature with optional direct recovery.

Syntax: `US [A] [B] [E]`

US Command Parameter Descriptions

Parameter	Description
A	If any error of type A occurs, the printer attempts to directly recover and continue in normal mode with no stop for recovery. Often performed with the **Feed** button.
B	If any error of type A occurs, the printer attempts to directly recover and continue in normal mode with no stop for recovery. Often performed with the **Feed** button.
E	Error 13 LTS reply control (label taken sensor). Returns error 13 if LTS detects a label before and after printing.

Remarks: Any or all parameters can be activated at the same time. Refer to Appendix A for information on error types.

Parameters are saved in Flash memory.

The format of the error messages is controlled by the eR command.

Example:

The table shows an example of the US command with a reply.

Command	Reply	Explanation
USABE 8	<ACK>	Activate all error flags.
eRQ,6,R 8		Setup user-defined error/status character control to Q for <XOFF> and R for <XON>.
N 8		Clears image buffer errors.
AA 8		Erroneous command type A (syntax error).
P 8	<NAK>01Q	Print image buffer with error 01,
	R	Direct recovery error 01 (type A) and continue.

USR - Read Serial Number

Purpose: Use this command to read the serial number in EEPROM.

Note: This command can only be used on PF8 printers.

Syntax: USR

UV - Product Identity and Asian Font Types

Purpose: Use this command to generate output on the RS-232 or USB port about the software and fonts stored in the memory cartridge.

Syntax: UV

Remarks: The first line returned after the UV command is base software appended by a CR/LF, the next is one line with information on the font appended by CR/LF.

V - Define Variable

Purpose: Use this command to define variable data fields for use in stored forms.

Syntax: Vp_1,p_2,p_3,"PROMPT".

V Command Parameter Descriptions

Parameter	Description
p_1	Variable reference number (00-99). A maximum total of 1500 bytes of data for all variables is allowed.
p_2	Maximum number of digits for the variable (1-99). A maximum total of 1500 bytes of data for all variables is allowed.
p_3	Field justification: L = Left justification. R = Right justification. C = Center justification. N = No justification.
[-]	A single leading minus sign in the prompt field causes the prompt to be sent one time only after the form is retrieved (Keyboard Display Unit only).
[--]	A double leading minus sign in the prompt field caused the prompt to be suppressed (Keyboard Display Unit only).
"PROMPT"	An ASCII text field transmitted to the host or Keyboard Display Unit via the serial interface each time this command is executed. This prompt requests the operator to enter the value for the variable. Length limited to 32 characters.

Remarks: This command is used in forms that require unique data on each label. Variables must be initialized in order (V00, V01, V02, etc.) immediately after the FS command.

The field justification parameter affects the way the variable is printed. When left, right, or center justification are selected, the counter value is printed left, right or center justified in an area with a width defined by the p_2 parameter. If the number of digits in the counter value is less than the number of digits defined by p_2, the area is padded with space characters.

If no justification is selected, the field adjusts to fit the actual length of the data without exceeding the set maximum field length, which may be useful when using a counter as input data to a bar code.

To print the contents of a variable, the number of the variable must be included in the "DATA" field of the A (Print Text) or B (Print Bar Code) commands.

Example:

This example shows how the field justification works in variable fields.

```
FK"TEST7" ↵
FS"TEST7" ↵
V00,10,L,"Variable 00" ↵
V01,10,R,"Variable 01" ↵
V02,10,C,"Variable 02" ↵
V03,10,N,"Variable 03" ↵
A50,50,0,3,1,1,N,"TEXT"V00":Left justified" ↵
A50,100,0,3,1,1,N,"TEXT"V01":Right justified" ↵
A50,150,0,3,1,1,N,"TEXT"V02":Center justified" ↵
A50,200,0,3,1,1,N,"TEXT"V03":No justification" ↵
FE ↵
```

Refer to the ? command for a continuation of this example.

W - Windows Mode

Purpose: Use this command to enable/disable the Windows command mode (special applications only).

Syntax: Wp_1

W Command Parameter Descriptions

Parameter	Description
p_1	Windows mode enable/disable: Y = Enables Windows mode. N = Disables Windows mode (default).

Remarks: When enabled, the printer accepts Windows mode escape sequences to print data. When disabled, escape sequences are ignored up to the next linefeed.

The Windows mode escape sequences are only used by the Windows Printer Driver. When working with a mainframe or other non-Windows host, this mode can be disabled to prevent erratic operation.

X - Draw Box

Purpose: Use this command to draw a box shape.

Syntax: `Xp1,p2,p3,p4,p5`

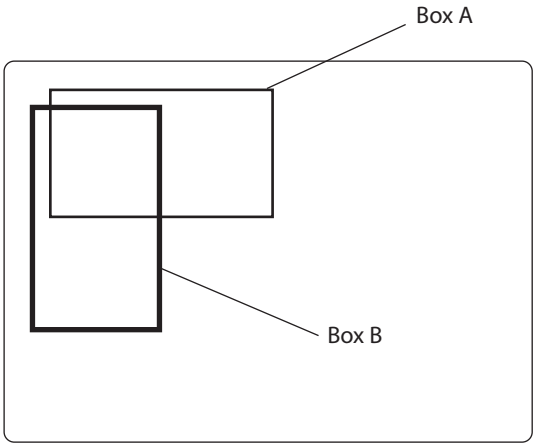
X Command Parameter Descriptions

Parameter	Description
p_1	Horizontal start position (X) in dots.
p_2	Vertical start position (Y) in dots.
p_3	Line thickness in dots.
p_4	Horizontal end position (X) in dots.
p_5	Vertical end position (X) in dots.

Example:

This example draws two boxes (A and B) on a label, see commands below:

```
N ↵
X50,200,5,400,20 ↵
X200,50,10,20,400 ↵
P1 ↵
```



Drawing a Box Example

Y - Serial Port Setup

Purpose: Use this command to establish the communication parameters of the serial RS-232 port.

Syntax: $Yp_1,p_2,p_3,p_4.$

Y Command Parameter Descriptions

Parameter	Description
p_1	Baud rate: 19 = 19,200 baud 96 = 9,600 baud 48 = 4,800 baud 24 = 2,400 baud 12 = 1,200 baud
p_2	Parity: O = Odd E = Even N = None

Y Command Parameter Descriptions (continued)

Parameter	Description
p_3	Number of data bits: 7 = 7 data bits 8 = 8 data bits
p_4	Number of stop bits: 1 = 1 stop bit 2 = 2 stop bits

Remarks: After receiving this command, the printer automatically resets its communication on the serial RS-232 communication port. There are no such parameters for the USB port.

By default, the printer is set for 9600 baud, no parity, 8 data bits, 1 stop bit. XON/XOFF handshaking is always used. The printer sends XOFF when an error occurs. RTS/CTS is not supported.

If the current communication setup is not known, it can be checked by printing a test label, see **"Autosensing Mode" on page 10** for more information on how to print a test label.

Example:

In this example, we are setting a 19,200 baud rate, odd parity, 7 data bits, and 1 stop bit.

```
Y19,O,7,1 ↵
```

Z - Print Direction

Purpose: Use this command to select the print orientation

Syntax: Zp_1

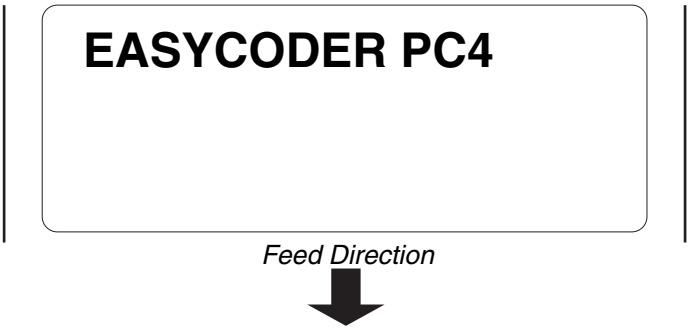
Z Command Parameter Descriptions

Parameter	Description
p_1	Print orientation: T = Start printing from the top of image buffer (default). B = Start printing from the bottom of image buffer.

Remarks: This command affects the complete print image, including text, bar codes, graphics, lines, and boxes, as well as the location f the reference point, see **"R - Set Reference Point" on page 107**.

Note: that printing a test label in the Test modes or using a U or UP command resets the print direction to default (ZT).

A label printed using the command ZT



A label printed using the command ZB

Example:

This example makes the printer print from the bottom of the image, see command below.

```
ZB ↵
```

5 ESim Fonts

This chapter lists the printer-resident fonts and illustrates the various font sizes.

Resident Fonts

The PF8 printers support uppercase and lowercase characters for font sizes 1-4 and uppercase characters for font size 5. All fonts are non-proportional. The ASCII value of the different characters is determined by the **I** command setting. For more help, see **"I - Character Selection" on page 84**.

203.2 dpi (8 dots/mm) (Illustrated in Chapter 8 and 9)

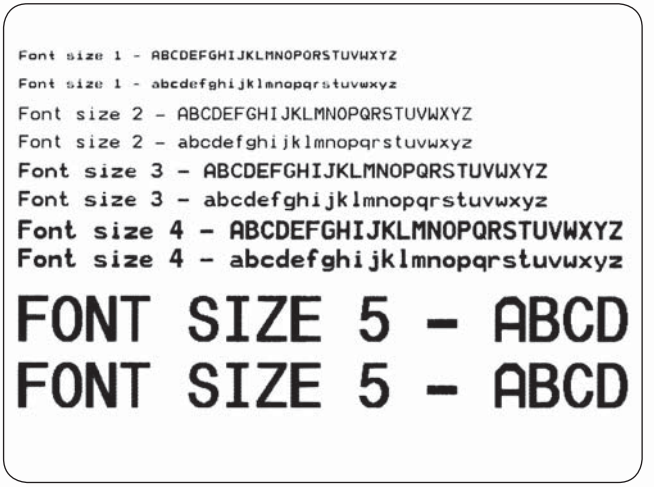
Font	Size (dots)	Size (points)	Characters/inch
1	8 x 12	6	20.3
2	10 x 16	7	16.9
3	12 x 20	10	14.5
4	14 x 24	12	12.7
5	32 x 48	24	5.6

300 dpi (8 dots/mm) (Not Illustrated)

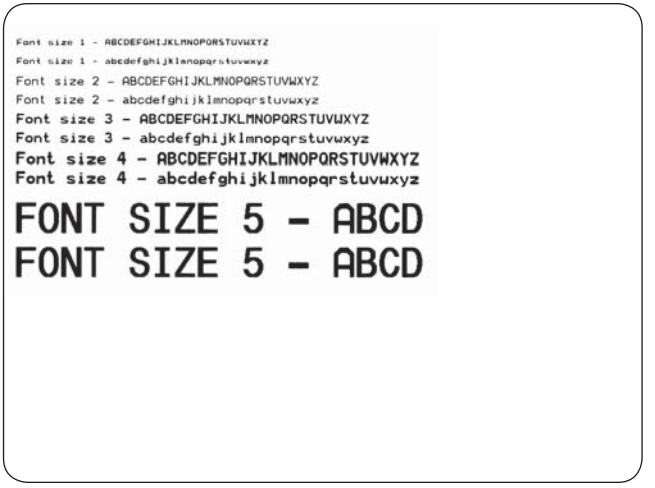
Font	Size (dots)	Size (points)	Characters/inch
1	12 x 20	4	25
2	16 x 28	6	18.75
3	20 x 36	8	15
4	24 x 44	10	12.5
5	48 x 80	214	6.25

Font Sizes 1-5

Illustrated below are the various font sizes in actual size printed using an 8 dots/mm (203.2 dpi) and an 11.81 dots/mm (300 dpi) printhead.


Font size 1 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 1 - abcdefghijklmnopqrstuvwxyz
Font size 2 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 2 - abcdefghijklmnopqrstuvwxyz
Font size 3 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 3 - abcdefghijklmnopqrstuvwxyz
Font size 4 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 4 - abcdefghijklmnopqrstuvwxyz
FONT SIZE 5 - ABCD
FONT SIZE 5 - ABCD

8 dots/mm (203.2 dpi) printhead


Font size 1 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 1 - abcdefghijklmnopqrstuvwxyz
Font size 2 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 2 - abcdefghijklmnopqrstuvwxyz
Font size 3 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 3 - abcdefghijklmnopqrstuvwxyz
Font size 4 - ABCDEFGHIJKLMNOPQRSTUVWXYZ
Font size 4 - abcdefghijklmnopqrstuvwxyz
FONT SIZE 5 - ABCD
FONT SIZE 5 - ABCD

11.81 mm (300 dpi) printhead

6 Code Pages

This section contains tables of the characters available in the various code pages for the printer-resident fonts.

Printout Samples.

Note: When using 7-bit communication, only the characters between ASCII 0 decimal and ASCII 127 decimal can be used.

For examples of the actual appearance of the characters, see **"ESim Fonts" on page 131**.

For information on and printout samples of Asian fonts, please refer to your printer user's manual.

Characters available when font size 5 is selected are indicated by a gray background in the tables. For more help, see **"A - Printing Text" on page 34**.

Code Page DOS 437 English (UK); Cmd I8,0,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
144 -	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£			ƒ
160 -	á	í	ó	ú	ñ	Ñ	a	º	¿			½	¼	¡		
176 -																
192 -																
208 -																
224 -		ß					µ									
240 -									°							

Code Page DOS 850 Multilingual (Latin 1); Cmd I8,1,001

16 -					¶	§									
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
144 -	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£			ƒ
160 -	á	í	ó	ú	ñ	Ñ	a	º	¿			½	¼	¡		
176 -						Á	Â	À						¢		
192 -							ã	Ã								
208 -			Ê	Ë	È		Í	Î	Ï						Ì	
224 -	Ó	ß	Ô	Ò	õ	Õ	µ			Ú		Ù				
240 -			=	¾	¶	§			°							

Code Page DOS 852 Latin 2 (Cyrillic II/Slavic); Cmd I8,2,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	ů	ć	ç	ł	ë	Ő	ő	î	Ź	Ä	Ć
144 -	É	Ĺ	Í	ô	ö	Ľ	ľ	Ś	ś	Ö	Ü	Ť	ť	Ł	×	č
160 -	á	í	ó	ú	Ą	ą	Ž	ž	Ę	ę		ź	Č	ş		
176 -						Á	Â	Ě	Ş					Ż	ż	
192 -							Ă	ă								¤
208 -	đ	Đ	Ď	Ë	ď	Ň	Í	Î	ě					Ţ	Ů	
224 -	Ó	ß	Ô	Ń	ń	ň	Š	š	Ŕ	Ú	ŕ	Ű	ý	Ý	ţ	
240 -						§						ű	Ř	ř		

Code Page DOS 860 Portuguese; Cmd I8,3,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
144 -	É	À	È	ô	õ	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù		Ó
160 -	á	í	ó	ú	ñ	Ñ	a	º	¿	Ò		½	¼	¡		
176 -																
192 -																
208 -																
224 -	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ		φ	ε	
240 -									°					²		

Code Page DOS 863 Canada (French); Cmd I8,4,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	ì	À	§
144 -	É	È	Ê	ô	Ë	Ï	û	ù	¤	Ô	Ü	¢	£	Ù	Û	ƒ
160 -	¦		ó	ú			³		Î			½	¼	¾		
176 -																
192 -																
208 -																
224 -	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ		φ	ε	
240 -									°					²		

Code Page DOS 865 Norway; Cmd I8,5,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
144 -	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø		ƒ
160 -	á	í	ó	ú	ñ	Ñ	a	o	¿			½	¼	¡		
176 -																
192 -																
208 -																
224 -	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ		ϕ	ε	
240 -									°					²		

Code Page DOS 857 Turkish; Cmd I8,6,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ı	Ä	Å
144 -	É	æ	Æ	ô	ö	ò	û	ù	İ	Ö	Ü	ø	£	Ø	Ş	ş
160 -	á	í	ó	ú	ñ	Ñ	Ğ	ğ	¿	®		½	¼	¡		
176 -						Á	Â	À	©					¢	¥	
192 -							ã	Ã								¤
208 -	o	a	Ê	Ë	È		Í	Î	Ï					|	Ì	
224 -	Ó	ß	Ô	Ò	õ	Õ	µ		χ	Ú	Û	Ù	ì	ÿ		
240 -					¶	§			°			¹	³	²		

Code Page DOS 861 Icelandic; Cmd I8,7,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	Ð	ð	Þ	Ä	Å
144 -	É	æ	Æ	ô	ö	þ	û	Ý	ý	Ö	Ü	ø	£			ƒ
160 -	á	í	ó	ú	Á	Í	Ó	Ú	¿			½	¼	¡		
176 -																
192 -																
208 -																
224 -	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ		ϕ	ε	
240 -									°					²		

Code Page DOS 862 Hebrew; Cmd I8,8,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
144 -	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת	¢	£	¥		ƒ
160 -	á	í	ó	ú	ñ	Ñ	a	o̲	¿			½	¼	¡		
176 -																
192 -																
208 -																
224 -	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ		ϕ	ε	
240 -									°					²		

Code Page DOS 855 Cyrillic; Cmd I8,9,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	ђ	Ђ	ѓ	Ѓ	ё	Ё	є	Є	s	S	i	I	ї	Ї	j	J
144 -	љ	Љ	њ	Њ	ћ	Ћ	ќ	Ќ	ў	Ў	џ	Џ	ю	Ю	ъ	Ъ
160 -	а		б	Б	ц	Ц	д	Д	е	Е	ф	Ф	г	Г		
176 -						х	Х	и	И					й	Й	
192 -							к	К								¤
208 -	л	Л	м	М	н	Н	о	О	п					П	я	
224 -	Я	р	Р	с	С	т	Т	у	У	ж	Ж	в	В	ь	Ь	№
240 -		ы	Ы	з	З	ш	Ш	э	Э	щ	Щ	ч	Ч			

Code Page DOS 866 Cyrillic; Cmd I8,10,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
144 -	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
160 -	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
176 -																
192 -																
208 -																
224 -	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
240 -	Ё	ё	Є	є	Ї	ї	Ў	ў	°				№	¤		

Code Page DOS 737 Greek; Cmd I8,11,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π
144 -	P	Σ	T	Y	Φ	X	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
160 -	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	υ	φ	χ	ψ
176 -																
192 -																
208 -																
224 -	ω	ά	έ	ή	ϊ	ί	ό	ύ	ü	ώ	Ά	Έ	Ή	Ί	Ό	Ύ
240 -	Ώ				Ϊ	Ϋ			°					²		

Code Page DOS 841 Greek 1; Cmd I8,12,001

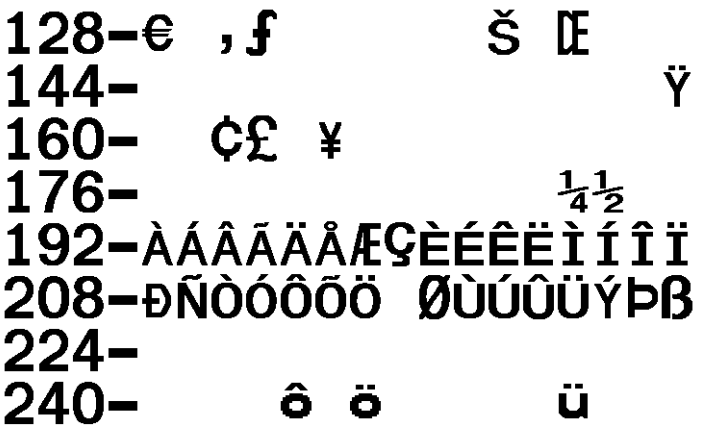
16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ç	ü	é	â	ä	à	Ά	ç	ê	ë	è	ï	î	Έ	Ä	Ή
144 -	Ί		Ό	ô	ö	Ύ	û	ù	Ώ	Ö	Ü	ά	£	έ	ή	ί
160 -	ï	ΐ	ό	ú	A	B	Γ	Δ	E	Z	H	½	Θ	I		
176 -				φ		K	Λ	M	N					Ξ	O	
192 -							Π	P								Σ
208 -	T	Y	Φ	X	Ψ	Ω	α	β	γ					δ	ε	
224 -	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	
240 -			υ		χ	$	ψ		°		ω	ü	ΰ	ώ		

Code Page DOS 869 Greek 2; Cmd I8,13,001

16 -					¶	§									
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -							Ά				|			Έ		Ή
144 -	Ί	Ϊ	Ό			Ύ	Ϋ	©	Ώ	²	³	ά	£	έ	ή	ί
160 -	ϊ	ΐ	ό	ύ	Α	Β	Γ	Δ	Ε	Ζ	Η	½	Θ	Ι		
176 -				ϕ		Κ	Λ	Μ	Ν					Ξ	Ο	
192 -							Π	Ρ								Σ
208 -	Τ	Υ	Φ	Χ	Ψ	Ω	α	β	γ					δ	ε	
224 -	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	
240 -			υ		χ	§	ψ		°		ω	ü	ΰ	ώ		

Code Page Windows 1252 Latin 1; Cmd I8,A,001

```
  0-
 16-
 32-  !"#$%&'()*+,-./
 48-0123456789:;<=>?
 64-@ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ [\]
 96-
112-
```



Code Page Windows 1250 Latin 2; Cmd I8,B,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}	Ž	
128 -	€		‚								Š	‹	š	Ť	Ž	Ź
144 -	Ÿ										Ś	›	ś	ť	ž	ź
160 -				Ł	¤	Ą	¦	§		©	Ş				®	Ż
176 -	°			ł		µ	¶			ą	ş		Ľ		ľ	ż
192 -	Ŕ	Á	Â	Ă	Ä	Ĺ	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ď
208 -	Đ	Ń	Ò	Ó	Ô	Õ	Ö	χ	Ø	Ù	Ú	Û	Ü	Ý	Ţ	ß
224 -	ŕ	á	â	ă	ä	Í	ć	ç	č	é	ę	ë	ě	í	î	ď
240 -	đ	ń	ň	ó	ô	ő	ö		ř	ů	ú	ű	ü	ý	ţ	

Code Page Windows 1251 Cyrillic; Cmd I8,C,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	Ђ	Ѓ	,	ѓ							Љ	‹	Њ	Ќ	Ћ	Џ
144 -	ђ										љ	›	њ	ќ	ћ	џ
160 -		Ў	ў	J	¤	Ґ	|	§	Ё	©	Є				®	Ї
176 -	°		I	i	ґ	µ	¶		ё	№	є		j	S	s	ї
192 -	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
208 -	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
224 -	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
240 -	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я

Code Page Windows 1253 Greek; Cmd I8,D,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	€		,	ƒ								‹				
144 -							–					›				
160 -				Ά	£	¤	¥	|	§		©	a			®	
176 -	°		²	³		µ	¶		Έ	Ή	Ί		Ό	½	Ύ	Ώ
192 -	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
208 -	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
224 -	ϋ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
240 -	π	ρ	ς		τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	

Code Page Windows 1254 Turkish; Cmd I8,E,001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	€		,	ƒ					ˆ		Š	‹	Œ			
144 -											š	›	œ			Ÿ
160 -		¡	¢	£	¤	¥	|	§		©	a				®	
176 -	°		²	³		µ	¶			¹	o		¼	½	¾	¿
192 -	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
208 -	Ğ	Ñ	Ò	Ó	Ô	Õ	Ö	χ	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
224 -	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
240 -	ğ	ñ	ò	ó	ô	õ	ö		ø	ù	ú	û	ü	ı	ş	ÿ

Code Page Windows 1255 Hebrew; Cmd I8,F001

16 -					¶	§										
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}		
128 -	€		,	ƒ					ˆ			‹				
144 -												›				
160 -		¢	£		¥	|	§			©					®	
176 -	°		²	³		µ	¶			¹			¼	½	¾	
192 -																
208 -																
224 -	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
240 -	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת					

Code Page In Dump Mode

0 -	00	☺	☻	♥	♦	♣	♠	•	◘	○	◙	♂	♀	♪	♫	☼
16 -	►	◄	↕	‼	¶	§	▬	↨	↑	↓	→	←	∟	↔	▲	▼
32 -		!	"	#	$	%	&	‘	(	)	*	+	,	-	.	/
48 -	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64 -	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80 -	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
96 -	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112 -	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	⌂
128 -	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
144 -	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
160 -	á	í	ó	ú	ñ	Ñ	a	o	¿	®	¬	½	¼	¡	«	»
176 -	▒	▓	▓	|	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
192 -	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	=	╬	¤
208 -	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	▉	▄	¦	Ì	▀
224 -	Ó	β	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	’
240 -	-	±	=	¾	¶	§	÷	´	°	¨	·	¹	³	²	▁	255

Size 1-4 (7 bit); USA; CMD I7, 0

```
  0 -
 16 -             ¶ §
 32 -    !   # $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - @ A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z [ \ ] ^ _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z
```

Size 1-4 (7 bit); British; CMD I7, 1

```
  0 -
 16 -            ¶ §
 32 -   !   £ $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - @ A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z [ \ ] ^ _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z
```

Size 1-4 (7 bit); German; CMD I7, 2

```
  0 -
 16 -            ¶ §
 32 -   !   # $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - § A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z Ä Ö Ü ^ _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z ä ö ü ß
```

Size 1-4 (7 bit); French; CMD I7, 3

```
  0 -
 16 -            ¶ §
 32 -   !   £ $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - à A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z ° ç § ^ _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z é ù è ¨
```

Size 1-4 (7 bit); Danish; CMD I7, 4

```
  0 -
 16 -            ¶ §
 32 -   !   # $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - @ A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z Æ Ø Å Ü _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z æ ø å ü
```

Size 1-4 (7 bit); Italian; CMD I7, 5

```
  0 -
 16 -            ¶ §
 32 -   !   £ $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - § A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z ° ç é ^ _
 96 - ù a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z à ò è ì
```

Size 1-4 (7 bit); Spanish; CMD I7, 6

```
  0 -
 16 -            ¶ §
 32 -   !   ¡ $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - ¡ A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z Ñ ñ ¿ ü _
 96 - á a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z é í ó ú
```

Size 1-4 (7 bit); Swedish; CMD I7, 7

```
  0 -
 16 -          ¶ §
 32 -    !   # $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - É A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z Ä Ö Å Ü _
 96 - é a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z ä ö å ü
```

Size 1-4 (7 bit); Swiss; CMD I7, 8

```
Swiss
  0 -
 16 -          ¶ §
 32 -    !   £ $ % & ' ( ) * + , - . /
 48 - 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
 64 - § A B C D E F G H I J K L M N O
 80 - P Q R S T U V W X Y Z à ç è ^ _
 96 - ` a b c d e f g h i j k l m n o
112 - p q r s t u v w x y z ä ö ü é
```

Size 5 (7 bit); USA; CMD I7, 0

```
 32-    #$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ \\
 96-
112-
```

Size 5 (7 bit); British; CMD I7, 1

```
 32-    £$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ \\
 96-
112-
```

Size 5 (7 bit); German; CMD I7, 2

```
 32-    #$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZÄÖÖÜ
 96-
112-                ß
```

Size 5 (7 bit); French; CMD I7, 3

```
 32-    £$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ
 96-
112-
```

Size 5 (7 bit); Danish; CMD I7, 4

```
 32-    #$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZÆØØÅÜ
 96-
112-
```

Size 5 (7 bit); Italian; CMD I7, 5

```
 32-    £$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ
 96-
112-
```

Size 5 (7 bit); Spanish; CMD I7, 6

```
 32-     $%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZÑ
 96-
112-
```

Size 5 (7 bit); Swedish; CMD I7, 7

```
 32-    #$%&    +,-./
 48-0123456789:
 64-ÉABCDEFGHIJKLMNO
 80-PQRSTUVWXYZÄÖÖÅÜ
 96-
112-
```

Size 5 (7 bit); Swiss; CMD I7, 8

```
 32-    £$%&    +,-./
 48-0123456789:
 64- ABCDEFGHIJKLMNO
 80-PQRSTUVWXYZ
 96-
112-
```

A Error Handling

This appendix explains the principles of error handling and lists:

- the various error types that may occur.
- the error replies that the printer can return to the host via an RS-232 or USB channel.
- how the status LED changes to various colors to notify the operator of an error condition.

Error Handling Principles

The firmware is able to handle a number of error conditions. Code numbers represent the different error cases.

The printer controls output of the error code and its format and waits until the error recovery is performed for each error code.

Error Action Source

For details on each error type, see **"Error Types" on page 158**.

A - Command Errors

The biggest group of error codes is command format and data information errors such as "Syntax error" or "Form or image name duplicate." This source generates errors of type A.

B - Printing Errors

Printing errors, such as "Out of media," "cover opened," and "cutting not completed", occur when printing cannot be correctly performed or completed. This source generates errors of type B, C, and D.

C - Status

A status error is not a true error case, but the operator should be made aware of the situation. A typical case is "LTS-detection waiting". This source generates errors of type E.

D - Special Mode

Some errors cause the printer to stop responding or generate unexpected output. Examples are: "Flashing not completed," or "Dump mode". This source generates errors of type F and G.

Error Action Output Information

The error code may be printed in the upper left corner of the label, "ERR01" for example. The control LED changes to orange or red.

Serial Port (RS-232 or USB)

- Output on the serial line when an error occurs is dependent on the setup commands.

- The commands UN and US turn off or on most of the error output information.
- The command eR specifies the format of the error output information.

Parallel Port

When an error occurs, the parallel port marks error status by setting pin 12 to an active state.

Error Recovery/Output

When an error occurs, the printer typically enters a waiting loop and waits for the operator to handle the error. During this "Error Waiting Loop" only the commands ^ee and ^@ can be executed.

The error recovery is often performed by pressing the **Feed** button. This releases the printer from the waiting loop and sends recovery information on the serial line (RS-232 or USB), normally <XON>.

For direct recovery, see also commands USA or USB.

Error-Handling Commands

This table lists and describes the error-handling commands.

Error-Handling Commands

Command	Description
US[A][B][E]	Optional error reporting.
UN	No error reporting.
eR	User defined error/status character control.
^ee	Error report - immediate
^@	Reset

Error Types

Classified types of error and status codes. For details, see the **"Error Response Messages" on page 159** and the full **"Error Response Tables" on page 160**.

Classifications of Error and Status Codes

Type	Feature	Generates	Recovery
A	Minor error of command sequence or similar.	At error reporting (command US): Sets error on print command and sets the orange or red LED. At no error reporting (command UN): Green LED at print command	At Error reporting (command US): **Feed** button or command Reset **^@**. See also command USA. At no Error reporting (command UN): No recovery necessary, already done.
B	Print stopping error.	LED: orange or red	**Feed** button or command Reset **^@**. See also command USB.
C	Paper end stopping error.	LED: red	Load new media and press the **Feed** button or command reset **^@**.
D	Error of printing functionality and status.	LED: red, may blink	Manual or automatic (temperature lowered) measure or command reset **^@**.
E	Status changes.	No LED change	No recover necessary/Delete Label from LTS. See also command reset **^@**.
F	Unrecoverable Error.	LED: red	Power Off/ON or command reset **^@**.
G	Dump mode.	LED: green	**Feed** button or command reset ^@
H	Pause mode.	LED: blinks green and orange.	**Feed** button or command ^B or ^C.

Error Response Messages

This table contains explanations for the text error messages listed in the **"Error Response Tables" on page 160**.

Error Text Description

Text	Description
Error	Referred error number divided in code and type.
Code	Referred error number.
Type	Letter is a classifying of error.
Description	Short friendly explanation.
Error response	Response depending on error reporting flag controlled by US and UN commands.
LED	Color of LED indicator: Green (GRN) Red (RED) Blinking red (BLNK RED) Orange (ORA)
Serial	Output on serial line (RS-232 or USB) at error response.
Response at ^ee	Output on serial line of error number, if only one error is available.
<LF>	0x0a
<CR>	0x0d
<CRLF>	0x0d + 0x0a
<XON>	0x11
<XOFF>	0x13
<NAK>	0x15
-	Nothing happens
[XOFF]	Flag for waiting on error recovery. Default value is <XOFF> = 0x13, but can be substituted with command eRp_1,6,p_3 where p_1 is replacement of <XOFF> and where p_3 is a replacement of <XON>.

Example:

Command eRF,6,N substitutes at error reply <XOFF> with the character "F," and at error recovery <XON> with the character "N."

Error Response Tables

This table lists the error responses and codes reported when Command US is on.

Error Responses and Codes Reported When Command US Is On

Error Code	Error Type	Description	LED	Serial	Response to Command ^ee
		No error	GRN		
01	A	Syntax error	RED	<NAK>01[XOFF]	01<CRLF>
02	B	Object exceeds image buffer border	ORA	<NAK>02[XOFF]	02<CRLF>
03	A	Data length error	RED	<NAK>03[XOFF]	03<CRLF>
04	A	Insufficient memory to store data	RED	<NAK>04[XOFF]	04<CRLF>
05	A	Memory configuration error	RED	<NAK>05[XOFF]	05<CRLF>
07	C	Out of media, marked with Pnnn = Number of remaining labels.	RED	<NAK>07[XOFF]	07<CRLF>
08	A	Form or image name duplicate.	RED	<NAK>08[XOFF]	08<CRLF>
09	A	Form or image not found	RED	<NAK>09[XOFF]	09<CRLF>
11	D	Printhead up (cover open)	RED	<NAK>11[XOFF]	11<CRLF>
13	E	LTS detection waiting, peel pause.	-	<NAK>13[XOFF]	13<CRLF>
16	A	No form was retrieved before "?<CRLF>" was entered.	RED	<NAK>16[XOFF]	16<CRLF>

Error Responses and Codes Reported When Command US Is On (continued)

Error Code	Error Type	Description	LED	Serial	Response to Command ^ee
17	C	Out of ribbon, marked with Rnnn = Number of remaining labels.	RED	<NAK>07Rnnn [XOFF]	17<CRLF>
50	A	Does not fit in area specified.	RED	<NAK>50[XOFF]	50<CRLF>
51	A	Data length too long	RED	<NAK>51[XOFF]	51<CRLF>
61	D	High motor temperature	BLNK RED	<NAK>61[XOFF]	61<CRLF>
62	D	High printhead temperature	BLNK RED	<NAK>62[XOFF]	62<CRLF>
71	F	Wait after default setup.	GRN	-	71<CRLF>
72	F	Flashing not completed	RED	<NAK>72[XOFF]	72<CRLF>
73	F	Download error	RED	<NAK>73[XOFF]	73<CRLF>
81	B	Cutter jammed or not installed.	BLNK RED	<NAK>81[XOFF]	81<CRLF>
89	G	Dump mode (after auto-detection).	GRN	<NAK>89[XOFF]	89<CRLF>
92	H	Pause printing mode	BLNK GRN/ORA	<NAK>92[XOFF]	92<CRLF>
94	G	Autosensing mode	OFF	<NAK>94[XOFF]	94<CRLF>
98	G	Download mode (not public use)			
99		Other errors		<NAK>99[XOFF]	99<CRLF>

This table lists the error responses and codes reported when Command US is off.

Error Responses and Codes Reported When Command US Is Off

Error Code	Error Type	Description	LED	Serial	Response to Command ^ee
		No error	GRN	-	
01	A	Syntax error	GRN	-	01<CRLF>
02	B	Object exceeds image buffer border	ORA	[XOFF]	02<CRLF>
03	A	Data length error	GRN		03<CRLF>
04	A	Insufficient memory to store data	GRN	-	04<CRLF>
05	A	Memory configuration error	GRN	-	05<CRLF>
07	C	Out of media, marked with Pnnn = Number of remaining labels.	RED	[XOFF]	07<CRLF>
08	A	Form or image name duplicate.	GRN	-	08<CRLF>
09	A	Form or image not found	GRN	-	09<CRLF>
11	D	Printhead up (cover open)	RED	[XOFF]	11<CRLF>
13	E	LTS detection waiting, peel pause.	-	-	13<CRLF>
16	A	No form was retrieved before "?<CRLF>" was entered.	GRN	-	16<CRLF>
17	C	Out of ribbon, marked with Rnnn = Number of remaining labels.	RED	[XOFF]	17<CRLF>
50	A	Does not fit in area specified.	GRN	-	50<CRLF>
51	A	Data length too long	GRN	-	51<CRLF>
61	D	High motor temperature	BLNK RED	[XOFF]	61<CRLF>
62	D	High printhead temperature	BLNK RED	[XOFF]	62<CRLF>
71	F	Wait after default setup.	GRN	[XOFF]	71<CRLF>
72	F	Flashing not completed	RED	[XOFF]	72<CRLF>
73	F	Download error	RED	[XOFF]	73<CRLF>

Error Responses and Codes Reported When Command US Is Off (continued)

Error Code	Error Type	Description	LED	Serial	Response to Command ^ee
81	B	Cutter jammed or not installed.	BLNK RED	[XOFF]	81<CRLF>
89	G	Dump mode (after auto-detection).	GRN	-	89<CRLF>
92	H	Pause printing mode	BLNK GRN/ORA	-	92<CRLF>
94	G	Autosensing mode	BLACK	[XOFF]	94<CRLF>
98	G	Download mode (not public use)			
99		Other errors		[XOFF]	99<CRLF>

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